D H E C
PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

JUL 1 2 2012

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

Re: QAPP Contractor Addendum Directive for Tier II
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567
Release Reported April 14, 2011
Phase II Assessment received April 14, 2011
QAPP Contractor Addendum Revision #1 received February 22, 2012
Tier I Assessment Report received July 11, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Tier I Assessment report submitted by Environmental Compliance Services on your behalf.

The report indicates that chemicals of concern are present in the soil and groundwater at concentrations that exceed risk-based screening levels. To determine what risk the referenced release may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of Tier II Assessment as outlined in the UST Quality Assurance Program Plan (QAPP) is necessary. The Tier II must be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. The report documents the highest levels of petroleum chemicals of concern from soil borings SB-1 and SB-2 in the vicinity of the diesel UST basin. Please be sure that monitoring wells are proposed in the vicinity of the UST basin as part of the Tier II Assessment since a monitoring well was not installed in that area during the Tier I assessment. A copy of the QAPP for the Underground Storage Tank Division is available at http://www.scdhec.gov/environment/lwm/html/ust.htm.

Your contractor must complete and submit the QAPP Contractor Addendum and Cost Agreement within thirty (30) days of the date of this letter. The cost agreement should include sampling of each water supply well within 1,000 feet of this facility. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that approval from the Agency must be issued before work begins.**

According to Division records, the release at the facility was reported to SCDHEC on April 14, 2011. In accordance with Section 44-2-40(D) of the SUPERB Act, you are responsible for the first $25,000 of site rehabilitation costs. To insure that expenditures made toward rehabilitation apply to the $25,000 deductible, the Division has pre-approved costs for implementing the Tier I and assigned a cost agreement number for tracking. By law, the SUPERB Account cannot compensate any costs that are not pre-approved.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708
Technical file

02567

Appendix B: Contractor Addendum

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Rhodesway North; UST Permit #02567

1400 Jefferies Highway, Walterboro, SC

Prepared by:
Micheal Clea
Environmental Compliance Services, Inc.
13504 South Point Blvd, Ste F
Charlotte, NC 28273

Date: August 13, 2012
Certified UST Site Rehabilitation Contractor #358
Environmental Compliance Services, Inc.

Approvals:

Art Shrader SC DHEC Project Manager	Signature	Date
Micheal Clea Contractor Project Manager	Signature	Date 8-21-2012
Kurt Blevins Site Rehabilitation Contractor	Signature	Date 8/21/2012
Craig L. Kennedy, PG Project Verifier/QA Manager	Signature	Date 8/20/2012
for Jeff Graham Laboratory Director	Signature	Date 8/17/12
Joshua Slusarczyk Shield Engineering Lab Director	Signature	Date 8-17-12

A2 Table of Contents

Table of Contents

A1 Title and Approval Page 2
A2 Table of Contents 3
A3 Distribution List 4
Table 1A Addendum Distribution List 4
A4 Project Organization 5
Definitions of Project Roles 6
A5 Problem Definition/Background 7
A6 Project/Task Description 7
A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) 9
A8 Training and Certificates 10
Table 3A Required Training and Licenses 10
A9 Documents and Records 12
Table 4A Record Identification, Storage, and Disposal 12
Section B Measurement/Data Acquisition 13
B1 Sampling Process/Experimental Design 13
Table 5A Sampling Activities 13
B2 Sampling Methods 14
Table 6A Field Corrective Action 16
B3 Sample Handling and Custody 17
B4 Analytical Methods 19
Table 7A Analytical SOPs and Referenced Methods 19
Table 8A SOP Abbreviation Key 20
Table 9A Corrective Action Procedures 22
B5 Quality Control Requirements: 23
B6 Field Instrument and Equipment Testing, Inspection and Maintenance 23
Table 11A Instrument and Equipment Maintenance 24
Table 12A Instrument and Equipment Inspection 25
B7 Instrument Calibration and Frequency 25
Table 13A Instrument Calibration Criteria and Corrective Action 26
B8 Inspection/Acceptance Requirements for Supplies and Consumables 27
Table 14A List of Consumables and Acceptance Criteria 27
B9 Data Acquisition Requirements (Non-Direct Measurements) 28
B10 Data Management 29
Section C Assessment and Oversight 31
C1 Assessment and Response Actions 31
C2 Reports to Management 31
Section D Data Validation and Usability 31
QAPP APPENDIX B ATTACHMENTS 32

A3 Distribution List

Name	Title	Organization/Address	Telephone Number	Fax Number	Email Address
Art Shrader	SC DHEC Technical Project Manager	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Kurt Blevins	Site Rehabilitation Contractor	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Micheal Clea	Contractor Project Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Jeff Graham	Laboratory Director	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Craig L. Kennedy, PG	Project Verifier/QA Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com
Steve Taylor	Well Services/Driller	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853		staylor@gexnc.com
Joshua Slusarczyk	Laboratory Director	Shield Engineering, Inc. 4301 Taggart Creek Road Charlotte, NC 28208-5483	(800) 395-5220	(704) 394-6968	jslusarczyk @shieldengineering.com

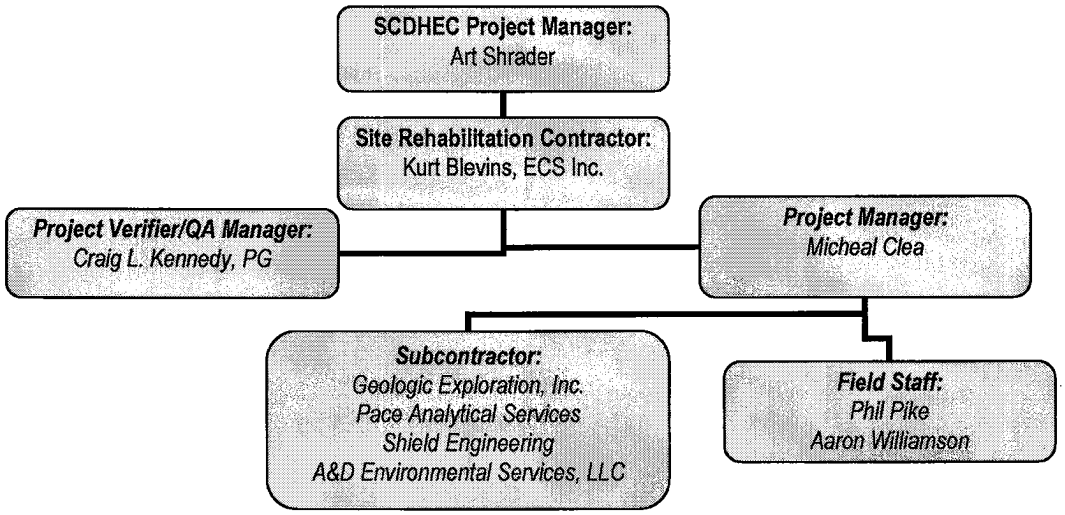
Table 1A Addendum Distribution List

A4 Project Organization

Role from the UST Master QAPP	Person in this Role for Project	Organization/Address	Telephone Number	Fax Number	Email Address
Project Manager	Art Shrader	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Site Rehabilitation Contractor	Kurt Blevins	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Contractor Project Manager	Micheal Clea	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Well Services/Driller	Steve Taylor	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853	800-752-8853	staylor@gexnc.com
Analytical Laboratory Director	Jeff Graham	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Project Verifier/QA Manager	Craig L. Kennedy, PG	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com
Pace Subcontractor: Shield Laboratory Director	Joshua Slusarczyk	Shield Engineering, Inc. 4301 Taggart Creek Road Charlotte, NC 28208-5483	(800) 395-5220	(704) 394-6968	jslusarczyk @shieldengineering.com
Investigative-Derived Waste Disposal Services	Bill Aikins	A&D Environmental Services, LLC 1741 Calks Ferry Road Lexington, SC 29703	803-957-9175	803-821-6021	baikins@adenviro.com

Table 2A Addendum Role Identification and Contact Information

Figure 1A Organizational Chart:



Definitions of Project Roles

Site Rehabilitation Contractor

Kurt Blevins is the local Branch Manager of ECS Inc and will be responsible for overseeing adherence to the site specific QAPP during all phases of work. The Site Rehabilitation Contractor is responsible for maintaining the original, approved QAPP.

Project QA Officer

The project QA Officer (Craig L. Kennedy, PG) provides review of field work, documentation of calibration for field instruments, lab data, and technical review of reports produced utilizing this data. The QA Officer will independently review data generated from this project and determine if the data meets QA/QC criteria as set forth in the SCDHEC UST Programmatic QAPP.

Project Manager

The Project Manager (Micheal Clea) will be responsible for work conducted during this scope of work and the primary point of contact. His duties will include development of the site specific QAPP, supervising field work, documenting and QA failures, determining corrective actions to QA failures, and preparing reports for submission to SCDHEC.

Field Staff

The contractor field staff will perform sampling and field activities per the QAPP document under the direction of the Project Manager. Field staff will be responsible for collection and sampling of related data and calibration of field instruments. The Project Manager in certain situations may also be a member of the Field Staff.

A5 Problem Definition/Background

Discuss the background (as much as is known) of the site and appropriate historical information, and why this site is being assessed.

The site is located at the intersection of N. Jeffries Boulevard (US Highway 15) and Robertson Blvd. The site currently operates as a petroleum retail facility and convenience store. The site consists of an approximated 2,000 square foot building constructed prior to 1994. A 2,680 square foot canopy and a 2,380 square foot canopy were located on opposite sides of the building. According to UST Registry, a release was reported on April 14, 2011 and confirmed on November 11, 2012.

Historical site assessment activities reviewed in preparation of this plan were limited to the April 2011 Site Check of the retail facility and the July 2012 Tier I report. The July 2012 Tier I report concluded Concentrations of BTEX, toluene and naphthalenes were detected above the RBSLs in soil during this Tier I Assessment. Concentrations of benzene, toluene, ethylbenzene, and MTBE exceeding their respective RBSL were detected in the groundwater sample collected from monitoring well 02567-MW1. Groundwater samples collected from monitoring wells 02567-MW1, 02567-MW2 and 02567-MW3 were reported to contain high concentrations of lead. Groundwater samples collected from surface water in the vicinity of the site did not contain concentrations of CoC above the RBSLs. The purpose of the Tier II investigation is to delineate the extent of chemicals of concern (CoC) in groundwater from the reported 2011 release at the site.

Please answer the following: Does this project fall under UST or Brownfields area?

Yes, UST Area.

A6 Project/Task Description

1. ***Summarize what is known about the work to be done. This can be a short sentence indicating what the Scope of this project is (see Master QAPP Section A6).***

   The UST Management Division has directed implementation of Tier II Assessment.

   A Tier II investigation shall be performed to assist with defining the horizontal and vertical extent of contamination from the release at the site. The Tier II assessment plan submitted includes the installation of nine soil borings for soil assessment in the area between and surrounding the UST basin and the dispensers, and 24 groundwater field screening points. The locations of these proposed field screening points were based on groundwater flow direction at the site and concentrations of Chemicals of Concern (CoC) in groundwater reported in the July 2012 Tier I report. Pending the results of the field screening points, monitoring wells were proposed in locations to assist with delineating the horizontal and vertical extent of the petroleum-impacted groundwater

media. For the purpose of scheduling this plan, six shallow monitoring wells and three telescoping (deep) well are proposed at this time. This Tier II assessment includes a comprehensive groundwater sampling event to include newly installed wells and three pre-existing wells (02567-MW-1, 02567-MW-2, and 02567-MW-3) associated with this site; grain size analyses for the screened intervals of the shallow and deep well in the source area and a shallow downgradient well; slug testing for the shallow and deep well in the source area and a shallow downgradient well; and a subsequent survey.

2. ***The work will begin within <u>Approximately One Month</u> after cost approval and the Tier II (including report) should be complete (and submitted) <u>within approximately 90 days (depending on access agreements) after cost approval receipt by ECS, Inc.</u>***

3. ***Are there time or resource constraints? Include those factors that may interfere with the tentative schedule.***

   Potential issues may arise from inclement weather, access issues, unpredicted site or equipment problems or schedule conflicts.

A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs)

Detail the geographical area that is to be part of the project. Maps should be included to show not only the topography and the geographical area of the State, but also to show more detail of the site itself including property lines.

The site is located in the Coastal Plain region of South Carolina. According to Newcombe (1989), near surface sediments consist of Pliocene- to Holocene-age undifferentiated sand, silt and clay of alluvial origin, representing terrace deposits of relict shorelines. The study area lies within the floodplain of the Ashepoo, Combahee and Edisto Rivers. The depositional setting of the area has been termed "transitional" from the alluvial, upper deltaic plain to the northwest, to the proximal marine and marine environments to the southeast. In this portion of the Coastal Plain, surficial sediments range in thickness from less than 50 to approximately 400 feet. Underlying the surficial sediments is the Cooper Formation, an equivalent to the upper portions of the Floridan Aquifer (Ocala Limestone), which is an important source of groundwater in the eastern Coastal Plain. The limestone overlies the Black Mingo Formation, a Paleocene-age limestone mixed with sub-equal portions of sand and clay. The Black Mingo Formation is also used for public water supply wells where it is found with the Floridan equivalents. Below the Black Mingo Formation are the Cretaceous aquifers. In the study area, these units are, in ascending order, the Cape Fear Formation, the Middendorf Formation and the Black Creek Formation. All three water-bearing units are semi-confined in the region, with the Black Creek Formation being the principal groundwater source for the study area. These Cretaceous units range in thickness from 500 feet to over 1,000 feet, and lie unconformably over pre-Cretaceous crystalline bedrock.

The Pliocene- to Holocene-age undifferentiated sands, silts and clays comprise the surficial aquifer in central Colleton County. These units are minor sources of water for agricultural and residential irrigation but generally do not supply potable water for domestic use. The Black Mingo and Cooper Formations, and to a lesser extent the Cretaceous aquifers, are the main sources of drinking water for the region. Recharge of the upper water-bearing unit, the Ocala Limestone, occurs from rainfall and surface runoff in areas where it outcrops. The lower Cretaceous units are recharged in their respective outcrop areas located to the northwest. In the study area, the base of freshwater has been estimated at 2,000 feet below sea level.

See attached **Figure 1** for topographic information, **Figure 2** for site vicinity information, **Figure 3** for the detailed site plan with UST locations and pre-existing monitoring well locations; and **Figure 4 and Figure 5** for proposed Tier II screening points and well locations.

A8 Training and Certificates

Required training and licenses:

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Project Manager	Micheal Clea	40 Hr HAZWOPER & Refresher	40 Hr: 1996 Refresher: Dec 2011	-	-
Project Verifier/ QA Manager	Craig L. Kennedy, PG	40 Hr HAZWOPER & Refresher	40 Hr: 1995 Refresher: February 2011	PG	2425
Field Staff	Phil Pike	40 Hr HAZWOPER & Refresher	40 Hr: 1990 Refresher: July 2011	-	-
Field Staff	Aaron Williamson	40 Hr HAZWOPER & Refresher	40 Hr: 2009 Refresher: July 2011	-	-
Pace Lab Manager	Jeff Graham	BS Chemistry	May 1984	Lab Certification	SC 9900601
Shield Engineering Lab Manager	Joshua Slusarczyk	BS Civil Engineering Technology	December 2008	Lab Certification	UCC-0019
Professional Surveyor	Jay Joshi			PLS	14811

Table 3A Required Training and Licenses

Kurt Blevins of **ECS, Inc.** is responsible for ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location: **588 Silver St, Agawam, MA**.

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Well Driller	Jonathan Burr	Continuing Ed.		Well Driller	1740
Well Driller	Vincent Federle	Continuing Ed.		Well Driller	1930
Well Driller	Mark Gettys	Continuing Ed.		Well Driller	1086
Well Driller	Nicholas Hayes	Continuing Ed.		Well Driller	1983
Well Driller	James Hess	Continuing Ed.		Well Driller	1929
Well Driller	Jason Mantak	Continuing Ed.		Well Driller	1494
Well Driller	Michael McConahey	Continuing Ed.		Well Driller	1276
Well Driller	Daniel Summers	Continuing Ed.		Well Driller	1430
Well Driller	Jerry Watkins	Continuing Ed.		Well Driller	1979

Steve Taylor of **Geologic Exploration Inc.** is responsible to ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location:
176 Commerce Blvd, Statesville, NC 28625.
It is understood that training records will be produced if requested by SC DHEC.

The Following Laboratory(ies) will be used for this Project:

Commercial Lab(s)

Full Name of the Laboratory: Pace Analytical Services, Inc.-Huntersville
Name of Lab Director: Jeff Graham
SC DHEC Certification Number: 9900601
Parameters this Lab will analyze for this project:

Soil:

Benzene, toluene, ethylbenzene, and total xylenes (BTEX), Naphthalene, and methyl tertiary butyl ether (MTBE)by EPA Method 8260B with Preparation 5035;

Groundwater:

BTEX, total naphthalenes, 1,2-dichloroethane (1,2-DCA), a and Oxygenates (includes MTBE, tertiary-amyl alcohol [TAA], tertiary-amyl methyl ether [TAME], tertiary-butyl alcohol [TBA], tertiary-butyl formate [TBF], diisopropyl ether [DIPE], ethanol, ethyl tertiary-butyl ether [ETBE], and 3,3-dimethyl-1-butanol) by EPA Method 8260B with Preparation 5030; and,
Ethylene dibromide (EDB) by EPA Method 8011;

Full Name of the Laboratory: Pace Analytical Services, Inc.- Asheville
Name of Lab Director: C B Johnson
SC DHEC Certification Number: 9903001
Parameters this Lab will analyze for this project:

Groundwater:

Total & Dissolved Lead by EPA Method 6010C, 6020A, or 7010

Full Name of the Laboratory: Shield Engineering, Inc.
Name of Lab Director: Joshua Slusarczyk
SC DHEC Certification Number: UCC-0019
Parameters this Lab will analyze for this project:

Soil:

Grain Size Analysis/Hydrometer by ASTM D422

Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's SOPs as part of this QAPP.

A9 Documents and Records

Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)

_X_ US Mail _X_ Courier _X_ Hand delivered

Other (please specify): Email if accepted by SCDHEC Project Manager

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Laboratory Instrument Raw Data	Target software	Electronic	To Disc –offsite storage for 5 yrs	Yes
Laboratory Final Reports	LIMS	Electronic	Tape backup – offsite storage for 5 years	Yes
Field Measurements	ECS, Inc.	Hard Copy: Field Book Electronic: PDF File	Hard Copy & PDF File: ≥5yrs	Yes
Well Construction Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Well Abandonment Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Waste Manifests	Transporter/Disposal Facility	Hard Copy & Electronic Copy	Transporter/Disposal Facility: ≥5yrs	Yes
Tier II Report	ECS, Inc.	Hard Copy & Electronic	≥5yrs	Yes

Table 4A Record Identification, Storage, and Disposal

Section B Measurement/Data Acquisition

B1 Sampling Process/Experimental Design

Item	Start Date	End Date	Comments
QAPP Preparation	Within approx. 30 days of receiving directive	Within approx. 60 days after receiving directive	End date dependent upon QAPP finalization
Access Agreements	Within approx. 30 Days of CA receipt	Within approx. 45 days after receipt of CA	End Date depends on approved or denied access agreements and/or encroachment permits
Utility Locate Request	Within approx. 10 Days of Access Agreements	Within approx. 30 days of Access Agreements	End Date depends on approved or denied access agreements and/or encroachment permits
Field Screening Activities	Within approx. 30 Days of Access Agreements	Within approx. 45 days of Access Agreements	End Date depends on success of delineating CoC with Access Agreements obtained
Monitoring Well Installations	Within approx. 30 Days of SCDHEC PM approval of well locations	Within approx. 45 days of SCDHEC PM approval of well locations	End Date depends on date of well locations approved by SCDHEC Project Manager
Subsequent Survey	Within approx. 15 Days of well installation	Within approx. 30 days after well installation	End Date depends on completion of well installation
Monitoring Well Sampling Event	Within approx. 15 Days of well installation	Within approx. 30 days after well installation	End Date depends on completion of well installation
Slug Tests	Within approx. 15 Days of well installation	Within approx. 30 days after well installation	End Date depends on completion of well installation
Disposal of IDW	Within approx. 10 day of sampling event	Within approx. 60 days after sampling event	End date depends on date of receiving laboratory analytical report for disposal
Report Prep/Submittal	Within approx. 10 day of sampling event	Within approximately 45 days after sampling event	End date depends on date of sampling event and date of receiving laboratory analytical report

Table 5A Sampling Activities

B2 Sampling Methods

Please note: The contractor must follow sampling protocols as given in the UST QAPP.

***Estimate* the number of samples of each matrix that are expected to be collected:**

Soil	19 (includes 7 soil borings, 6 soils during well install, and 6 for Trip, Field Blanks & Duplicate)
Ground Water from monitoring wells	15 (includes 9 new wells, 3 existing wells, and 3 for Trip & Field Blanks and Duplicates)
From Drinking/Irrigation water wells	0
From surface water features	0
Total number of Water samples	39 (24 Field Screening, 15 MW & includes Trip & Field Blanks and Duplicates)

The samples will be (check as many as apply): ____Homogenized ____Split

For the sample matrices indicated above, please describe how samples will be collected and the equipment needed.

Decontaminated stainless steel hand augers shall be used to collect shallow subsurface samples (≤5 feet). Typically, 4-inch auger-buckets with cutting heads are pushed and twisted into the ground, then removed as the buckets are filled. Deeper soil sampling will be accomplished using power equipment, such as a Geoprobe. The Geoprobe will utilize the Macro-Core Soil Sampler for soil sample collection. The Macro-Core Soil Sampler includes a light-weight center rod, sample tube, liner and direct push device for collecting discrete interval samples of unconsolidated materials at depth. The liners range in length size between 36 inches, 48 inches, and 60 inches and each has an approximate 1.375-inch outside diameter. The truck-mounted drill rig will utilize split-spoon samplers. Split-spoon samplers are usually driven either inside a hollow-stem auger or an open borehole after the auger(s) have been temporarily removed. The spoon is driven with a 140-pound hammer through a distance of up to 24 inches and removed. Continuous split-spoon samplers may be used to obtain five-foot long, continuous samples approximately 3 to 5 inches in diameter. These devices are placed inside a five-foot section of hollow-stem auger and advanced with the auger during drilling. As the auger advances, the central core of soil moves into the sampler and is retained. Before the soil is placed in a sample container, it is necessary to remove the top several inches of soil to minimize the possibility of cross-contamination of the sample from fall-in of material from the upper portions of the hole.

Field screening groundwater samples may be collected by using a truck-mounted, hydraulically driven probe drive system (Geoprobe). The Geoprobe shall drive a decontaminated stainless steel-slotted well screen with point to a position no greater than 5 feet below the water table. The groundwater samples will be collected by using a length of dedicated polyethylene tubing equipped with a check-valve, which when oscillated, will pump groundwater up into the tubing and to the surface or by attaching a vacuum pump to the polyethylene tubing to pump the water to the surface.

Groundwater samples will be collected by using new disposable polyethylene bailers.

Please see attached ECS SOP 4.00 General Sampling Procedures for Aqueous & Solid Matrices.

Will Sampling Equipment have to be cleaned and decontaminated or is everything disposable?
Soil samples shall be collected and jarred while wearing nitrile gloves. Sterile soil sampling jars shall be made of glass and provided by the subcontracted laboratory.

Groundwater samples will be collected using disposable bailers. Nitrile gloves will be worn by field staff and changed between tasks and locations. The disposable sampling equipment and gloves will be disposed as solid waste at a municipal facility.

Specific Sampling Equipment Quality Assurance Techniques as detailed in Appendix H of the SCDHEC Programmatic QAPP shall be followed during all site activities.

If sampling equipment must be cleaned please give a detailed description of how this is done and the disposal of by-products from the cleaning and decontamination.

Stainless steel hand auger and Macro-Core Soil Sampler will be cleaned with tap water and soap, using a brush if necessary, to remove particulate matter and surface films. Steam cleaning (high pressure hot water with soap) may be necessary to remove matter that is difficult to remove with the brush. Augers that are steam cleaned should be placed on racks or saw horses at least two feet aboveground. Rinse thoroughly with tap water. Allow to air dry.

Groundwater water quality readings will be collected using a multi-parameter water quality meter (as discussed in Section B-6). The water quality meter and water level meter will be cleaned between sample points with a solution of alconox and deionized water and rinsed with deionized water.

Please see attached ECS SOP 10.00 Decontamination.

Decontamination water will be containerized with purge water in properly labeled; DOT approved 55-gallon drums and disposed as non-hazardous waste at an approved facility.

Investigative Derived Wastes shall be placed in a 55 gallon drum, labeled with the proper labeling (Non-hazardous or Hazardous) following RCRA regulations and left onsite to be picked up by A&D Environmental Services.

Identify any equipment and support facilities needed. This may include such things as Fed-ex to ship the samples, a Geoprobe, field analysis done by another contractor (who must be certified), and electricity to run sampling equipment.

The following drilling equipment shall be utilize and maintained by Geologic Exploration Inc. for field screening and monitoring well installation purposes: Geoprobe 7822DT, Geoprobe 7822DT, Geoprobe 6620DT, Diedrich D-120 (truck mounted), DrillMax 2400, Mobil B-58 (truck mounted), Diedrich D-120 (atv), Drilltech D25KW.

Investigative Derived Wastes (soil & water) shall be received by A&D Environmental Services.

The samples shall be delivered to the Pace lab by the subcontracted laboratory's courier service. Subcontracted lab samples will be picked up by the subcontracted lab's courier service. ECS, Inc. is not responsible for delivery of samples between contracted laboratories.

Address the actions to be taken when problems occur in the field, and the person responsible for taking corrective action and how the corrective action will be documented.

Failure	Response	Documentation	Individual Responsible
Drilling Equipment failure	Contact Steve Taylor	Note problem schedule date to remobilize to site.	Drilling supervisor
Horiba Water Quality Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff
Purge Pump Failure	Use Hand bailing Method	Sampling sheet & Report	Field Staff
Water Level Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff

Table 6A Field Corrective Action

B3 Sample Handling and Custody

1. How will the samples get from the Site to the Lab to ensure holding requirements are met?

Samples shall be submitted to the lab from the site by the following procedures:

1) Samples shall be brought back to the office and kept cold in a sample storage refrigerator until they are picked up within the following business day by the laboratory's courier service.

Chain of Custody procedures shall be properly followed for each delivery scenario.

2. How will the contactors cool the samples and keep the samples cool?

Samples shall be stored in a secured, thermally insulated container with ice until transferred to a dedicated and secured sample storage refrigerator. Each cooler will contain sufficient ice to ensure that a 4°C temperature is maintained and will be packed in a manner to prevent damage to the sample containers. The grain size/hydrometer soil sample collected in the field will not be separated from other soil samples collected for lab analysis until container reaches laboratory.

3. How will the lab determine the temperature of the samples upon receipt? Will they be using a temperature blank?

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. The laboratory personnel will open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottles using the infrared (IR) thermometer gun.

4. ***Where will the samples be stored in the Lab once they are received?***

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. Once logged in and labeled, samples are place in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below.

Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved with a stir bar, or deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.

Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:

The 5g aliquot is preserved with a stir bar, 5mL of deionized water and a stir bar, or 5mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or

Within 48 hours of collection in the field, the 5g aliquot must be immediately extracted with 5mL of methanol and stored in a segregated volatiles cooler until analysis, or

Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Mercury or Hexavalent Chromium analysis is needed. If Mercury or Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler. Samples requiring low level mercury analysis by Method 1631 are taken to the clean room for preservation and ambient storage.

5. ***Describe the chain of custody procedure and attach a copy of each chain of custody that will be used. If a Chain of Custody SOP exists from the Lab and the Contractor is willing to adhere to it, then this may be attached.***

Laboratory Chain of Custody procedures are outlined in the most recent revision of SOP S-CAR-C-001, Sample Management.

A Chain of Custody shall be completed according to the attached Instructions for Completing a CoC. Samples shall be disposed of using proper procedures by laboratory personnel. ECS, Inc. is not responsible for laboratory sample disposal.

Soil disposal by laboratories: All soils are disposed at an off-site landfill. Soils that are contaminated are placed in a 230 degree Fahrenheit oven for 16 hours then are disposed of in the area where they were collected from.

See attached laboratory Chain of Custodies.

B4 Analytical Methods

1. ***Identify the SOPs which will be used to analyze the samples, the method which the SOP references and the equipment or instrumentation that is needed:***

Parameter	SOP ID*	Method Referenced	Equipment	Comments
BTEX, Naphthalene, 1,2-DCA, Oxygenates, Ethanol	S-CAR-O-023	8260B	Purge and Trap Mass Spectrometer System	
EDB	S-CAR-O-020	8011	GC ECD	
PAHs	S-CAR-O-015	8270D	Direct Inject Mass Spectrometer System	
PAHs	S-CAR-O-052	8270D	Direct Inject Mass Spectrometer System	
Lead	S-ASV-I-043	EPA 6010C	ICP Varian ICP Thermo Elemental	
RCRA Metals	S-ASV-I-043 S-ASV-M-020	6010C 245.1 7470A 7471B	ICP, Mercury Analyzer	
Nitrate	S-ASV-021	353.2	Flow Injection Analysis Lachat 8000	
Grain Size	S-5	ASTM D422	Sieves Oven Scale	
Hydrometer	S-6	ASTM D422	Sieves Oven Scale 1000mL Cylinder Hydrometer Thermometer	

Table 7A Analytical SOPs and Referenced Methods

- **This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

Abbreviation	Lab Identification of this SOP	Full Name of the SOP
S-CAR-O-023	S-CAR-O-023-rev.08	Determination of Volatile Organic Compounds by GC/MS
S-CAR-O-020	S-CAR-O-020-rev.05	Determination of EDB, DBCP and TCP in Water by Microextraction
S-CAR-O-015	S-CAR-O-015-rev.05	Determination of Semi-Volatile Organic Compounds in Aqueous, Solid or Waste Samples by GC/MS
S-CAR-O-052	S-CAR-O-052-rev.2	Determination of Semivolatile Organics by GC/MS-SIM, Selective Ion Monitoring
S-ASV-I-043	S-ASV-I-043-Rev.02	DETERMINATION OF METALS BY INDUCTIVELY COUPLED PLASMA (ICP) SPECTROSCOPY BY SW-846 6010C
S-ASV-I-58	S-ASV-I-58-Rev.00	Ion Chromatography
S-ASV-I-021	S-ASV-I-021-Rev.01	The Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry
S-ASV-M-020	S-ASV-M-020-Rev.03	Mercury by Cold Vapor for Waters and Solids
S-5	Grain Size	S-5 Grain Size ASTM D422
S-6	Hydrometer	S-5 Hydrometer ASTM D422

Table 8A SOP Abbreviation Key

2. Identify procedures to follow when failures occur, identify the individual responsible for corrective action and appropriate documentation:

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Equipment check	Equipment failure	Contact Steve Taylor	Note problem, schedule date to remobilize to site.	Drilling supervisor
Method Blank, one per batch of 20 samples	If hits in Method Blank	Samples with hits above reporting limit are reextracted or reanalyzed. Samples with hits less than reporting limit are reported and the method blank is qualified. Samples with hits more than 10x the hit in the MB maybe footnoted with a B-flag	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Method Blank, one per batch of 20 samples	If Surrogates outside of control limits	All samples reextracted or reanalyzed if surrogate recovery is below control limits. Samples are reported and MB is footnoted if surrogate recovery is above control limits	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedances.	If LCS analyte recoveries are above control limits, samples with a hit for the failing analyte above the reporting limit are reextracted or analyzed. If LCS analyte recoveries are below control limits, all samples are reextracted or reanalyzed. If LCS analyte recoveries are above control limits, samples without a hit for the failing analyte above the reporting limit are footnoted and reported. Samples may be reported if there is an acceptable matrix spike (where allowable) or laboratory control sample duplicate associated and the LCS is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	If RPD outside control limits	Samples are reported and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Corrective actions are the same as Laboratory Control Sample. Samples are reported if LCS is acceptable and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Matrix Spike, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	RPD outside control limits	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Surrogates, all samples	If Surrogates outside control limits	If surrogate recovery is high and samples are non-detected samples are reported with qualification. If surrogate recoveries are low samples are re-extracted or reanalyzed.	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
All Samples	Lost Samples	SCDHEC will be notified and samples will need to be collected again for each lost sample.	Tier I report	ECS Project Manager
All Samples	Samples out of Hold Time	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager
All Samples	Broken vials or air bubbles in vials	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager

Table 9A Corrective Action Procedures

3. Identify sample disposal procedures.

Analysis	Matrix	Schedule for disposal	Method for disposal	Comments
-	Decon water	As generated	55 gal drum onsite	See B2 Discussion
-	Soil	As generated	55 gal drum onsite	See B2 Discussion
All	Soil and Water	Monthly	Veolia Technical Solutions	All laboratory samples are disposed according to S-CHR-S-002, Waste Handling and Management

4. Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).

Not Applicable

B5 Quality Control Requirements:

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP.

B6 Field Instrument and Equipment Testing, Inspection and Maintenance

1. Identify all fields and laboratory equipment needing periodic maintenance, the schedule for this, and the person responsible. Note the availability and location of spare parts.

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
In-Field PID Instrument	MiniRae 2000 PGM 7600	As recommended in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
In-Field Groundwater Quality Instrument	Horiba Y2FAH6H3	As recommended in attached Horiba W-22XD.23XD Operation Manual pp 28-32	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Volatiles Mass Spec	ALL	Change traps, clean ion source, replace filaments	Periodic	Laboratory	MSV Analyst
Semivolatile Mass Specc	ALL	Injection port maintenance, ion source maintenance, column replacement	Periocid	Laboratory	MSSV Analyst
Groundwater Level Indicator	Heron WLI 11614	As recommended in attached Heron Instrument O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Interface Probe	1220056491	As recommended in attached Heron Interface O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
ECD GC	ALL	Injection port maintenance, column replacement	Periodic	Laboratory	GC Analyst
MetrohmIC	ALL	Replace autosampler filter, tubing, line filter, sample Line and Waste Line, as needed. Clean Pump roller, Check Reagent levels, flow rate, waste line.	Periodic	Laboratory	IC Analyst
ICP	ALL	Clean Sample introduction system , autosampler, torch, Change spray chamber, torch tubing, tubing	Periodic	Laboratory	ICP Analyst
Cetac Mercury Analyzer	ALL	Clean GLS, Change Pump tubing, Nafion Dryer, Lamp	Periodic	Laboratory	Mercury Analyst

Flow Injection Analysis – Lachat 8000	ALL	Clean Rods, Injection Valves, Manifolds, Replace tubing, lamps, other as needed	Periodic	Laboratory	Nitrate Analyst

Table 11A Instrument and Equipment Maintenance

2. Identify the testing criteria for each lab or field instrument that is used to ensure the equipment is performing properly. Indicate how deficiencies, if found, will be resolved, re-inspections performed, and effectiveness of corrective action determined and documented. Give the person responsible for this.

Instrument/Equipment & Serial Number	Type of Inspection	Requirement	Individual Responsible	Resolution of Deficiencies
In-Field PID Instrument MiniRae 2000 PGM 7600	Daily prior to use	Calibration as discussed in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
In-Field Groundwater Quality Instrument Horiba Y2FAH6H3	Daily prior to use	Calibration as discussed attached in Horiba W-22XD.23XD Operation Manual pp 28-32	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Groundwater Level Indicator Heron WLI 11614	Daily prior to use	Calibration as discussed in attached Heron Instrument O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Interface Probe Heron 1220056491	Daily prior to use	Calibration as discussed in attached Heron Interface O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Volatiles Mass Spec	Daily calibration check	Method Requirements	MSV Analyst	Recalibration or instrument maintenance
Semi volatiles Mass Spec	Daily calibration check	Method Requirements	MSSV Analyst	Recalibration or instrument maintenance
ECD GC	Daily calibration check	Method Requirements	GC Analyst	Recalibration or instrument maintenance
Metrohm IC	Daily calibration check	Method Requirements	Nitrate Analyst	Recalibration or instrument maintenance
ICP	Daily calibration check	Method Requirements	ICP Analyst	Recalibration or instrument maintenance
Cetac Mercury Analyzer	Daily calibration check	Method Requirements	Mercury Analyst	Recalibration or instrument maintenance
Flow Injection Analysis –	Daily calibration	Method Requirements	IC Analyst	Recalibration or

Lachat 8000	check Method Requirements			instrument maintenance

Table 12A Instrument and Equipment Inspection

B7 Instrument Calibration and Frequency

1. Identify equipment, tools, and instruments for field or lab work that should be calibrated and the frequency.
2. Describe how the calibrations should be performed and documented, indicating test criteria and standards or certified equipment.
3. Identify how deficiencies should be resolved and documented. Identify the person responsible for corrective action.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
In-Field PID/FID Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10
In-Field Groundwater Quality Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	Horiba W-22XD.23XD Operation Manual pp 28-32
Groundwater Level Indicator	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Instrument O&M Manual
Interface Probe	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Interface O&M Manual
Volatiles Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSV Analyst	S-CAR-0-023
Semi volatile Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSSV Analyst	S-CAR-O-015 S-CAR-O-052
GC ECD	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	GC Analyst	S-CAR-O-020
Metrohm IC	3 calibration	When indicated by	Method Criteria	Detailed in SOP	IC Analyst	S-ASV-058

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
	standards for all compounds	daily calibration verification standard				
ICP	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	ICP Analyst	S-ASV-043
Cetac Mercury Analyzer	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Mercury Analyst	S-ASV-M-020
Lacaht QuickChem 8000	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Nitrate Analyst	S-ASV-I-021
Sieve	S-5	6 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Grain Size
Ovens	S-4	4 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Ovens
Scales	S-17	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Electronic Scales
Hydrometer	S-6	24 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Hydrometer
Hydrometer Solution	S-7	monthly	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Sodium Hexametaphosphate
Thermometer	S-21	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Digital Thermomters

Table 13A Instrument Calibration Criteria and Corrective Action

*** This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B8 Inspection/Acceptance Requirements for Supplies and Consumables

1. Identify critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials.
2. Identify the individual(s) responsible for this.

Item	Vendor	Acceptance criteria	Handling/Storage Conditions	Person responsible for inspection and tracking.
Span gas for PID	Liquid Technology Corp.	Attached pressure gauge reads what sticker on span gas can details.	Cool dry cabinet	Phil Pike Aaron Williamson
Leather Gloves	Home Depot	New & Undamaged	Cool dry cabinet	Phil Pike Aaron Williamson
Nitrile Gloves	Enviro-Equipment	New & Undamaged	Sealed boxes	Phil Pike Aaron Williamson
Laboratory Chemicals	Fisher,VWR,	Certificates of analysis and laboratory testing	Laboratory storage	Receiving and laboratory personnel
Laboratory standards	O2Si, Restek, Fisher, VWR, Inorganic Ventures, CPI	Certificates of analysis and laboratory verifications	Vendor specific storage conditions	Laboratory Analysts
Sample Containers	Daniels Scientific, Fisher, O2Si	Certificates of analysis and laboratory testing	Bottle storage area	Sample receiving personnel
Disposable Bailers	GeoTech	New & Undamaged	Individually wrapped in sterile plastic	Phil Pike Aaron Williamson
Twine	Home Depot	Sealed in plastic	Sealed in plastic and isolated from contaminant sources	Phil Pike Aaron Williamson

Table 14A List of Consumables and Acceptance Criteria

B9 Data Acquisition Requirements (Non-Direct Measurements)

1. Identify data sources, for example, computer databases or literature files, or models that should be accessed or used.
2. Describe the intended use of this information and the rationale for their selection, i.e., its relevance to project.
3. Indicate the acceptance criteria for these data sources and/or models.

Data Source	Used for	Justification for use in this project	Comments
Previously Submitted UST Closure Report, Tax Map, Topographic Maps	Historic GW depth/GW Quality & values	Establishes the DTW; Establishes materials needed.	Documents provided by SCDHEC will be considered an acceptable data source.
-	-	-	-
-	-	-	-

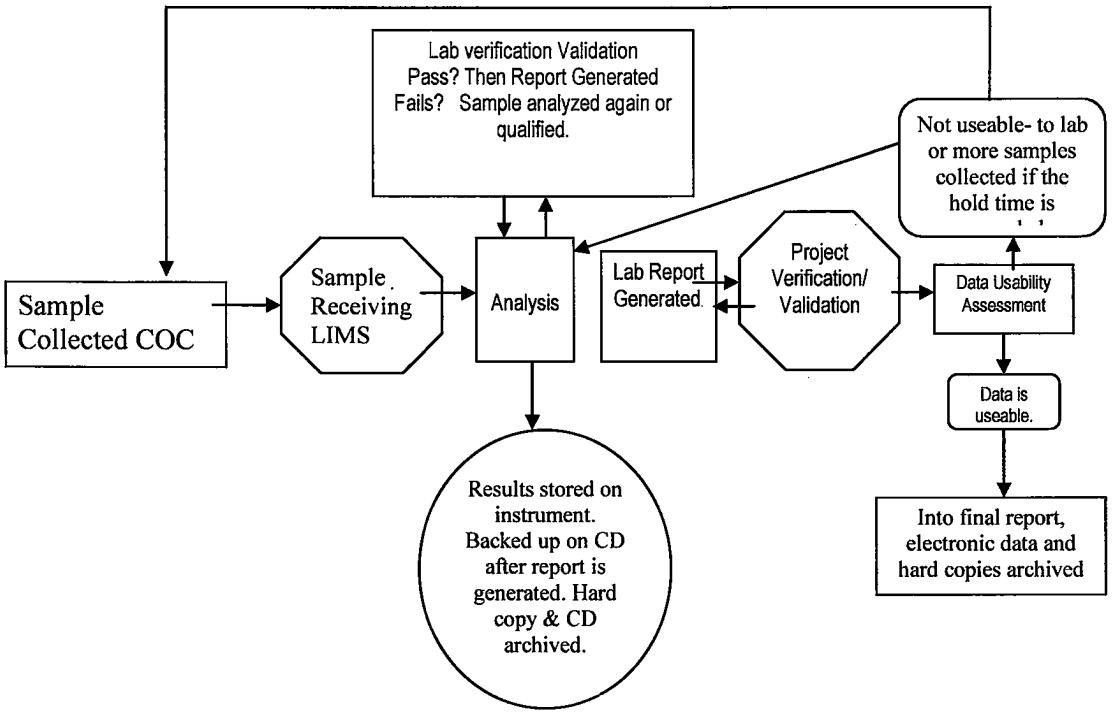
Table 15A Non-Direct Measurements

4. Identify key resources/support facilities needed.

Samples shall be picked up at ECS, Inc. and transported to the laboratory by the subcontracted laboratory's courier service. No additional support facilities will be anticipated for this scope of work.

B10 Data Management

1. Describe the data management scheme from field to final use and storage.



2. How does the lab and field staff ensure that no unauthorized changes are made to the chain of custody, sampling notebooks, laboratory notebooks and computer records?

The laboratory maintains comprehensive Quality Control and Training Programs. All sample receipt data, sample log-in and analytical data is peer reviewed, including review for inappropriate changes. Data management, review procedures and the Quality Systems Program are documented in the laboratory's Quality Manual and Standard Operating Procedures. The Quality Management Department oversees adherence to and review of these programs.

Field notes are recorded in bound, water resistant log books using indelible ink. Pages are dated at the start of the field day, and the name or initials of the field staff, weather, and required activities for the day are recorded. Chain-of-custody documentation information is recorded on field sheets which accompany samples to the lab. Data collected in the field is also entered into a limited access database.

Project related computer files are stored on a restricted access network server. Information is backed-up daily. Logbooks are scanned into the network server.

3. How does the lab ensure that there are no errors in samples records including times when sample information is compiled, data calculated and/or transmitted?

Sample data acquisition software included audit trails which are reviewed periodically under the Laboratory's Quality Systems Program. Laboratory data systems are backed up daily and able to be restored in the event of a system failure. These procedures are documented in laboratory SOPs S-ALL-IT-001, System Security and Integrity and S-ALL-IT-002, Server Backup. The IT System Manager is responsible for these systems and procedures.

4. How will the data be archived once the report is produced? How can it be retrieved? (This applies to both electronic and hard copies).

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Hard copies will remain in the office for a minimum of 5 years. The electronic copies will be maintained for a minimum 5 years.

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Section C Assessment and Oversight

C1 Assessment and Response Actions

1. *The Contractor is supposed to observe field personnel daily during sampling activities to ensure samples are collected and handled properly and report problems to DHEC within 24 hours. Please state who is responsible for doing this and what observations will be made. Will this person have the authority to stop work if severe problems are seen?*

The Contractor Project Manager will supervise field personnel during sampling activities to ensure samples are collected according to the requirements of the QAPP. The Contractor Project Manager shall provide oversight and will have the authority to stop work when necessary.

2. *The SCDHEC UST QAPP states that the Lab will receive an Offsite Technical System Audit. For this project, what assessments will be done on the Commercial Lab(s) that are being used—other than their certification audit? When or how often are these done? Who will the results be given to and who has the ability to stop work if problems are severe?*

Contractor may request an Independent Audit based on document review or complaints.

The laboratory participates in annual Proficiency Testing through an approved vendor, Environmental Resources Associates. Proficiency Testing results are provided to the Office of Environmental Laboratory Certification. Each laboratory will notify ECS, Inc. of any problems and if the previous data is suspect.

The ECS, Inc. project manager will have the authority to stop work when necessary.

C2 Reports to Management

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

Section D Data Validation and Usability

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

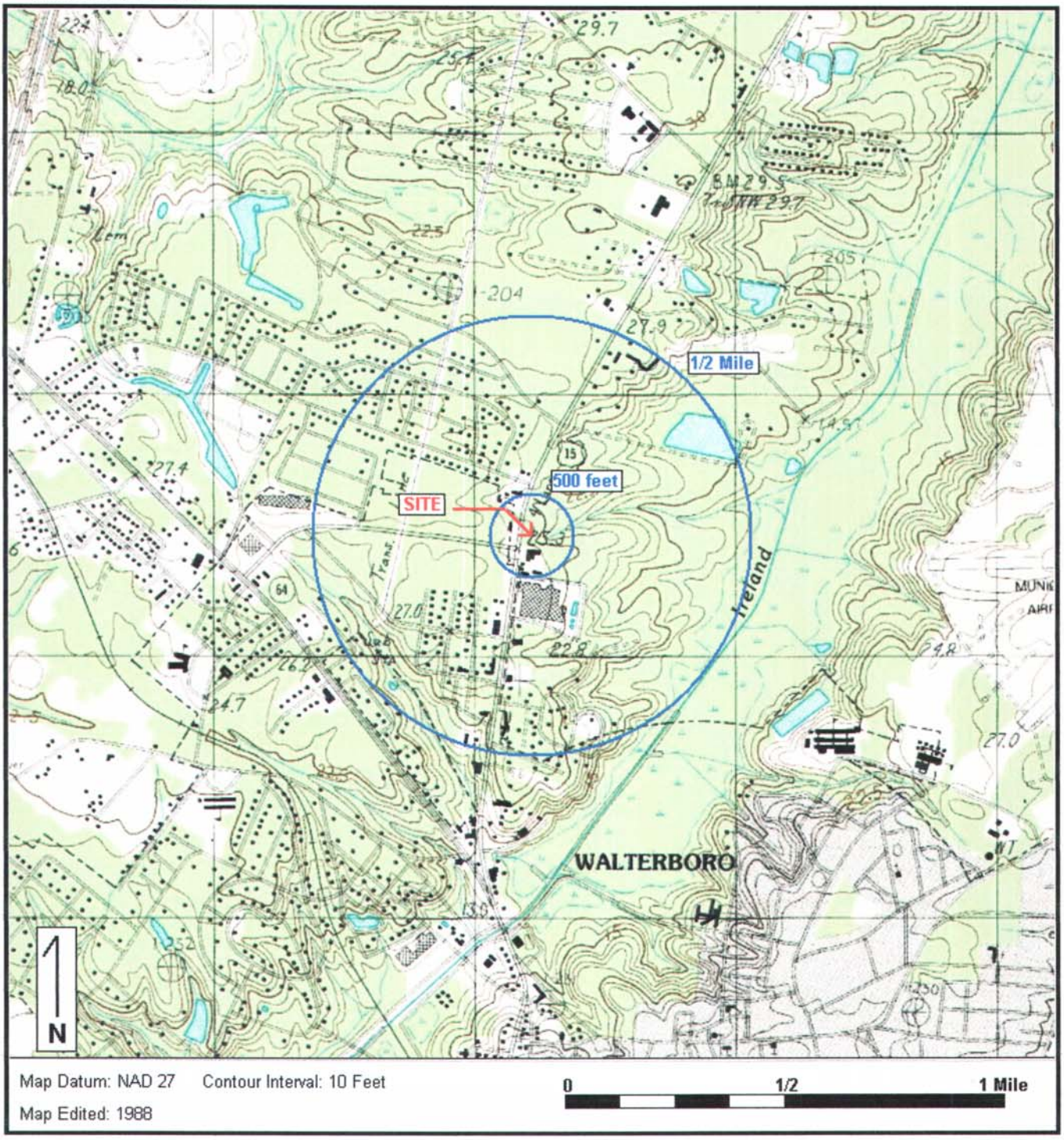
QAPP APPENDIX B ATTACHMENTS

O&M Manuals, SOPs, & Laboratory Chain of Custodies

Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

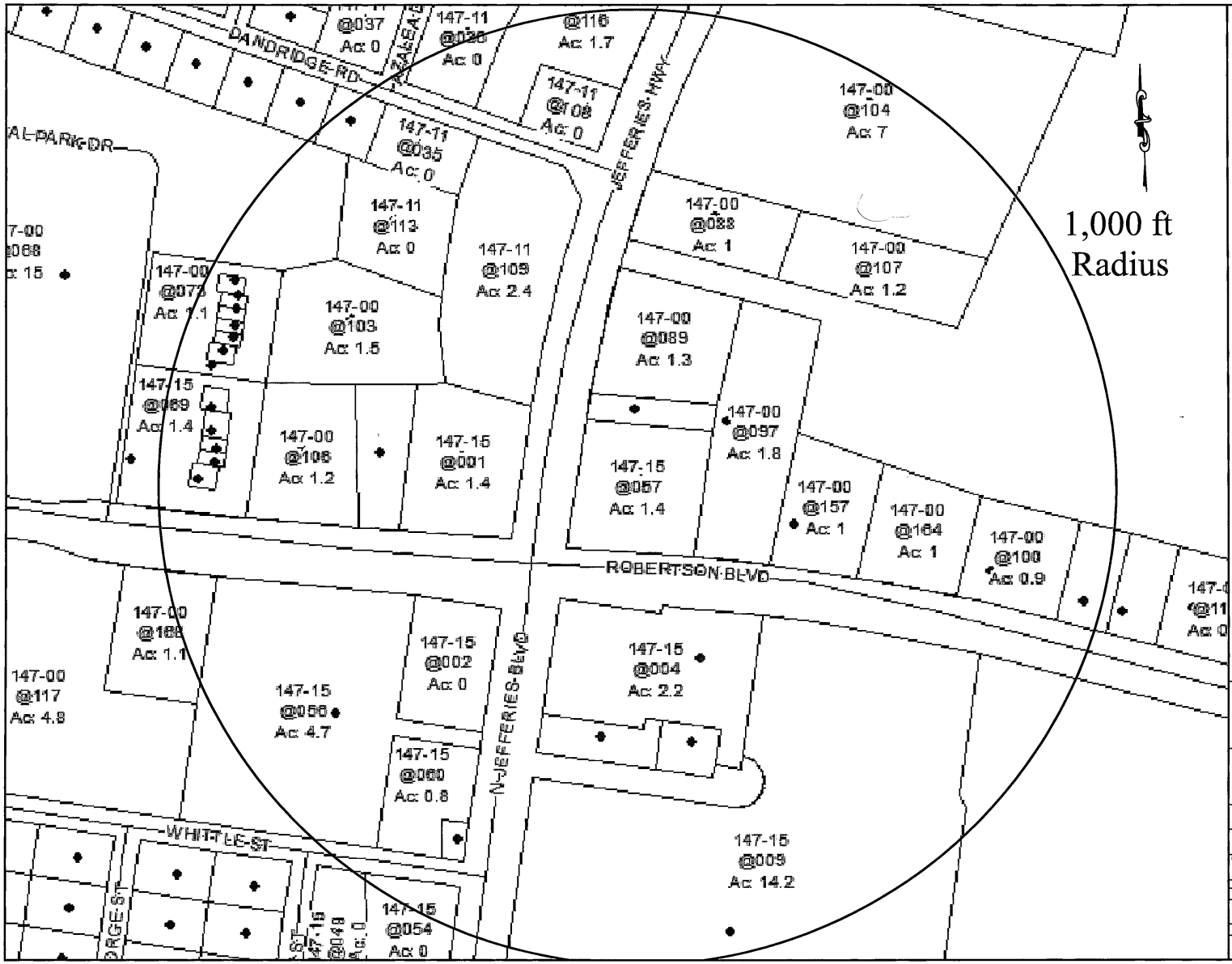
Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC

Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH

Generated By: Kevin Collins



Legend

Approximate Property Line

Monitoring Well

MW–1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-758-3550 Fax: 413-789-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

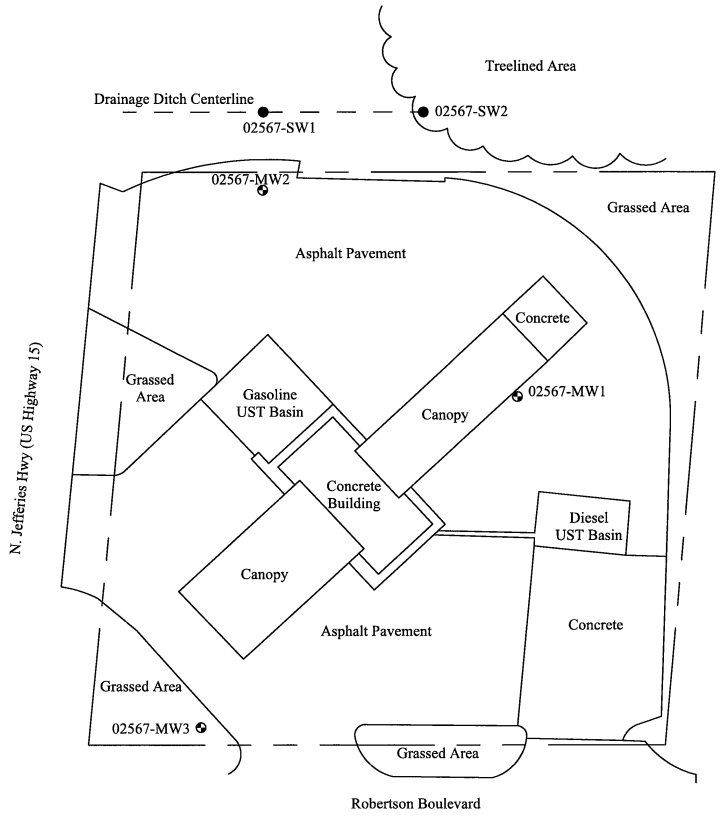
TITLE: SITE VICINITY MAP

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 200 100 0 100 200

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 200'	7/9/12	14-215778	2



Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
558 Silver Street • Agawam, MA 01001
Phone 1-800-782-3638 Fax 413-789-2778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
SITE PLAN

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 40'	7/9/12	14-215778	3

Legend

- Prop Deep Well
- Shallow FS Point/Prop MW
- Deep FS Point
- Soil Boring
- Shallow FS Point
- ECS-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
568 Silver Street * Agawam, MA 01001
Phone: 1-800-759-3530 Fax: 413-789-2776

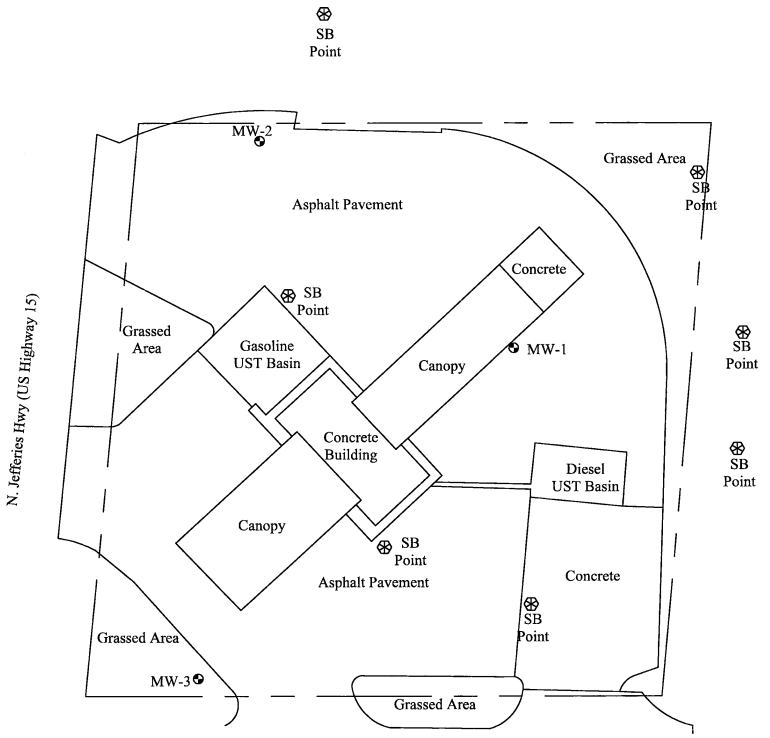
PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Field Screening Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:			
DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 150'	8/17/12	14-215778	4



Legend

- Deep FS Point
- Soil Boring
- Shallow FS Point
- ECS-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
888 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3930 Fax: 413-789-8776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

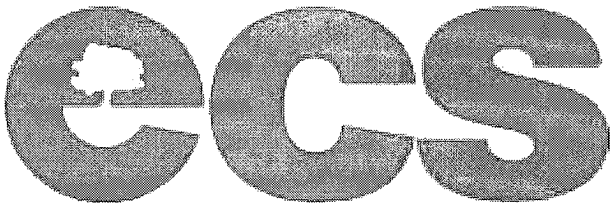
TITLE:
Field Screening Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 150'	8/17/12	14-215778	5



Environmental Compliance Services, Inc.

STANDARD OPERATING PROCEDURES
FOR
ENVIRONMENTAL COMPLIANCE SERVICES, INC.
AT
SOUTH CAROLINA UST SITES

Prepared For:

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October 2011

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STANDARD OPERATING PROCEDURES

This document details the standard operating procedures (SOPs) employed by Environmental Compliance Services (ECS) of Agawam, Massachusetts. These SOPs are employed by ECS when performing environmental assessments, hydrogeological investigations, and remedial activities on properties with releases of oil and hazardous materials. These SOPs are based on current commonly accepted professional standards and practices in the environmental field.

These SOPs cover the technical aspects of drilling, installation of monitoring wells, sampling of environmental media, and hydrogeological investigations. These activities will be conducted in general accordance with the SOPs unless site-specific conditions are encountered. Any changes in SOPs due to site specific conditions will be specified within a scope of services prior to the performance of the work, if known. If conditions are encountered during the performance of the work, the changes will be duly noted within the report documenting the work. Alternative methods are discussed for jobs requiring a lesser level of quality assurance and quality control (QA/QC).

These SOPs are based on established procedures included within the following: guidance documents produced by the American Society for Testing and Materials (ASTM), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC); published professional papers; and current professional standards and practices. References for cited documents and papers are attached.

GENERAL SAMPLING PROCEDURES FOR AQUEOUS AND SOLID MATRICES

During field sampling activities, the following applicable procedures will be practiced for sample collection:

- Whenever possible, samples will be collected first from the location expected to be least contaminated. Samples that are expected to be most contaminated will be collected last.
- Accurate and detailed field notes will be maintained in a bound field notebook. Soil samples will be examined and logged in the field.
- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.
- Soil samples will be selected for analysis based on the results of qualitative field screening for total volatile organic vapors, visual and olfactory observations, and the depth of the water table.
- Sample containers will be labeled with the site name, project number and date prior to being filled with a sample.
- All sample collection, handling, and shipping information will be recorded in a field notebook.
- Groundwater samples will be logged in a field notebook. Samples of other matrices (sediment, surface water, soil, etc.) will be logged in a field notebook.
- All samples should be collected according the specific requirements of the intended analytical method. Tables 1 and 2 provide lists of sample containers, preservation and holding time requirements for aqueous and soil/sediment samples, respectively.

Table 1: Sample Container, Preservation, and Holding Time for Groundwater

Table 1 **Sample Container, Preservation, and Holding Time for Groundwater**				
Analyte	**Analytical Method**	**Container**	**Preservation**	**Holding Time**
Benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Toluene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethylbenzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Total Xylenes	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
Total Naphthalenes	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1 ,2-Dichloroethane	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
MTBE	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
EDB	8011	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl, Residual Chlorine present: add $Na_2S_2O_3$ to make 0.008% concentration	14 days
ETBE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
3,3-Dimethyl-1- butanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAME	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
DIPE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBF	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1,2,4- and 1,3,5-trimethyl benzene isomers	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-butyl, sec-butyl, and tert-butyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
isomers				
Isopropyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-propyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Full List 8260B Scan	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C	7 days
Benzo(a)anthracene	3510C with 8270D	Amber glass container with Teflon-lined lid	Cool to 4° C	7 days until extraction 40 days after extraction
Benzo(b)flouranthene	3510C with 8270D	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Benzo(k)flouranthene	3510C with 8270D	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Chrysene	3510C with 8270D	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Dibenz(a,h)anthracene	3510C with 8270D	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
TPH (Oil & Grease)	1664	1 Liter Glass	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Barium	6010C or 6020A	Polyethylene or Glass	HNO_3 to pH <2	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Chromium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Mercury	7470A	Polyethylene or Glass	HNO_3 to pH <2	28 days
Selenium	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
Nitrate	9210 or 9056	Polyethylene or Glass	Cool to 4° C	48 hours
Sulfate	9056	Polyethylene or Glass	Cool to 4° C	28 days
Methane	Kerr Method RSKSOP-175 rev 2, May 2004	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C, pH < 2 with 1:1 HCl	14 days
Ferrous Iron	SM3500-Fe D	Glass	None	48 hours [1]
pH	9040C	NA	NA	Within 15 minutes
Conductivity	9050A	NA	Cool to 4° C	28 days
Turbidity	SM-2130B	NA	Cool to ~ 6° C	48 hours
Temperature	SM-2550B	NA	NA	Within 15 minutes
Dissolved Oxygen	SM-4500 O G or ASTM D888-05	NA	NA	Within 15 minutes

1 Analysis should be performed immediately in the field; however, if analysis is done in a laboratory, holding time is not to exceed 48 hours

Table 2
Sample Container, Preservation, & Holding Time for Soil

Analyte	Analytical Method	Container	Preservation	Holding Time
Benzene	5035 with 8260B	See Method for Requirements in SW 846		
Toluene	5035 with 8260B			
Ethylbenzene	5035 with 8260B			
Xylenes	5035 with 8260B			
Total Naphthalenes	5035 with 8260B			
MTBE	5035 with 8260B			
Benzo(a)anthracene	3546, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(b)fluoranthene	3546, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(k)fluoranthene	3546, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Chrysene	3546, 3540C, 3541, 3545A or 3550C with	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after

Table 2
Sample Container, Preservation, & Holding Time for Soil

Analyte	Analytical Method	Container	Preservation	Holding Time
	8270D			extraction
Dibenz(a,h)anthracene	3546, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (DRO)	3546, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (GRO)	5035 with 8015C	See Method for Requirements in SW 846		
TPH (Oil & Grease)	9071 B	Wide-mouth glass container with Teflon-lined lid	Cool to 6° C	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	None	6 months
Barium	6010C or 6020A	Polyethylene or Glass	None	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Chromium	6010C or 6020A	Polyethylene or Glass	None	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Mercury	7471 B	Polyethylene or Glass	None	28 days
Selenium	6020A or 7010	Polyethylene or Glass	None	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
TCLP (metals)	1311	See Method for Requirements in SW 846		
Total Organic Carbon (TOC)	9060A	Polyethylene or Glass	Coot to 4° C	28 days

- All samples will be placed in a chilled, thermally-insulated container containing ice. Blue ice, ice packs, or ice substitutes are not able to reach and maintain the required temperature until receipt at a laboratory.

- All soil samples for volatile organic compound analysis must be collected, preserved, and handled according to published method procedures.

GROUNDWATER SAMPLE COLLECTION PROCEDURES USING BAILERS OR PUMPS

The following groundwater sampling protocols are based on standard methods found in ASTM Designation: D4448-85a, USEPA guidance documents (numerous references), and SCDHEC Quality Assurance Program Plan For The Underground Storage Tank Management Division, June 2011.

1. MATERIALS

The following equipment and materials may be used during groundwater sampling. Not all material and equipment is necessary all of the time.

* health and safety equipment;
* map of well locations;
* well keys;
* interface probe;
* electronic water level indicator;
* PID or FID;
* pH, conductivity, and temperature meters; or a water quality monitoring system (pH, conductivity, temperature, ORP, and optional dissolved oxygen);
* field book;
* disposable gloves;
* stainless-steel, Teflon ™ or PVC, bailers with Teflon check valves;
* dedicated polypropylene cord;
* bucket (calibrated in gallons);
* sample containers and labels;
* chain-of-custody forms;
* cooler and cold source;
* decontamination equipment;
* polyethylene sheeting;
* polyethylene tubing and check valve;
* field filtering apparatus.

Pre-decontaminated bailers will be wrapped in an inert material (i.e. plastic bags) and stored in a clean environment during transport to the Site (See Decontamination Procedures).

In order to ensure the collection of groundwater samples representative of the aquifer, the standing water within the well is first purged. Note: Depth to water level measurements will be performed in each monitoring well prior to purging and sampling (see Water-Level Measurement Procedures).

2.0 WELL PURGING

- An interface probe or electronic water level indicator will be lowered to the air-water interface and the depth to water and depth of the well will be recorded. If the presence of a free phase product (light non-aqueous phase liquid - LNAPL) is suspected, an interface probe will be lowered to the product-water interface and the thickness of the product will be measured. Depth of the well will not be measured if LNAPL is present.

- If no free phase product is present in the well purging will begin:

  - Groundwater will be purged from the well using a decontaminated stainless-steel or PVC bottom-emptying bailer equipped with a Teflon™ check valve, or a non-contaminating water pump.

  - Groundwater collected during purging and sampling of groundwater monitoring wells will be discharged to the subsurface at the point of withdrawal in accordance with Massachusetts General Law Chapter 21E and 310 CMR 40.0056 of the Massachusetts Contingency Plan. If purge water is grossly contaminated (i.e. contains free phase product) this water will be drummed and disposed of according to applicable municipal, state, and federal regulations (See Disposal Procedures).

  - When using a pump, clean, dedicated polyethylene tubing will be used for each well. In appropriate situations, the polyethylene tubing can be stored in the well casing for use during future sampling events.

  - When using dedicated stainless-steel, PVC, or Teflon™ bailers to purge the wells, a separate pre-decontaminated bailer will be used for each well.

  - The bailer will be suspended with disposable/dedicated polypropylene cord. Care will be taken that the cord does not touch the ground during sampling and purging. The cord will be discarded upon completion of each well sampling event.

  - Non-dedicated bailers will be decontaminated in the field between each well sampling event according to Decontamination Procedures.

  - One of the following procedures will be used to determine if the purging is complete:

    A. The efficiency of purging will be verified by measuring changes in the temperature, pH, and specific conductance (in-situ parameters) of well water during purging. The stabilization of pH, temperature, and conductivity readings for two consecutive measurements, indicates that " stagnant water" has been removed from the well and that aquifer formation water (groundwater) is now entering the well. Stabilization will be defined as the following; The pH measurements should be to within ± 0.1 pH unit, the temperature to within ± 1.0°C, and specific conductance to within ± 10 umhos/cm for two consecutive readings.

    B. An alternative method for determining if purging is complete may be used where the use of this method meets the assessment objectives. In this case, the well will be pumped or bailed until a specified volume of water has been removed from the well, commonly a minimum of 3 to 5 well bore volumes. In wells screened within low permeability formations, the well may go "dry" prior to the removal of 3 to 5 volumes. Purging is considered complete in this case. However, the complete

draining of a well will be avoided if possible during the purging process because of the potential loss of volatiles.

- For complete purging of "stagnant water" (using either a pump or a bailer) the removal of well water will occur from just below the air-water interface in the well. In some situations, when using a pump, the pump intake may be lowered to remain just below the water surface as pumping is in progress. If the well screen is 20 feet or longer, groundwater will be pumped or bailed from the mid-point of the screen.

- The temperature, conductivity, and pH of the first well volume will be recorded using individual pH, conductivity, and temperature meters or a water quality monitoring system. These parameters may be measured following the removal of each subsequent well volume. If specified, oxidation reduction potential will also be recorded.

- The volume of purge water will be measured by pumping or bailing groundwater directly into a container of known volume.

- When using a pump for purging, a water quality monitoring system can be connected to the pump discharge in order to monitor the in-situ parameters. In-situ parameters may be alternatively monitored in a beaker filled from the bailer or the pump discharge.

- When bailing, care will be taken to assure that the bailer cord is held in the hand or placed upon plastic surrounding the well to prevent the potential of cross contamination from the ground surface to the well.

- The volume of water purged from the well, the measurements of temperature, pH, and specific conductivity, and observations of color, odor, and turbidity will be recorded on a sampling log. An example of the ECS Groundwater Sampling Log is attached.

- All measuring equipment will be decontaminated between uses (See Decontamination Protocols). The groundwater measuring equipment will be calibrated daily prior to use and in the field if field personnel suspect a problem with the calibration.

- When using dedicated bailers, the stainless-steel bailers will be rinsed with clean potable water following sample collection and placed in a plastic bag for transport to the company's facility where decontamination will take place (See Decontamination Procedures).

3.0 GROUNDWATER SAMPLING PROTOCOL

- Water samples for the analysis of volatile organic compounds (VOCs) (including volatile petroleum hydrocarbons) will be collected as soon as the well has sufficiently recovered from purging and within three hours of purging. Samples for the analysis for VOCs will be collected from the first volume of water collected from the top of the water column in the well.

- Groundwater samples collected for the analysis of VOCs will be collected in duplicate 40-milliliter glass vials with zero headspace. Vials will be pre-preserved with hydrochloric acid to a pH of <2. The vial will be uncapped carefully in order to avoid contact with the Teflon septum. The vial will be filled slowly taking care to not to agitate the sample when transferring it from the bailer to the sample vial. Each vial will be filled until there is a meniscus over the lip of the vial. If no meniscus forms, a sample of water will be collected in the cap and poured slowly into the vial to create a meniscus. The Teflon-faced septum will be placed on the convex meniscus and the cap screwed

down. The vial will be inverted and tapped to check for the presence of air bubbles. If air bubbles are present, the sample will be discarded and another vial will be selected and filled.

- Groundwater samples for analysis for PCBs, pesticides, total and extractable petroleum hydrocarbons, semivolatiles organic compounds, metals, other inorganic compounds, and general chemical parameters, will be collected last. Assuming adequate recharge, all samples will be collected within 3 hours of purging or upon 90% recovery.

- Groundwater samples for the analysis for dissolved (soluble) metals will be collected by using HDPE tubing with a decontaminated checkvalve and an in-line dedicated 0.45 micron filter. Care will be taken to pump the sample with very gentle pressure, in order to avoid any potential failure of the cartridge filter. The sample will be collected directly in a 1-liter HDPE bottle pre-preserved with nitric acid to achieve a pH <2.

- The sample containers for groundwater samples collected for all analyses other than VOCs will be filled to 90% capacity. Care will be taken so that no portion of the sample comes in contact with the sampler's gloves. ECS Standard Operating Procedure (SOP) # 4.00 should be referenced for selection of proper sample containers and preservation methods for each analytical method.

- Duplicate samples, field blanks, and equipment rinsate blanks will be collected according to specified QA/QC frequency

- A trip blank consisting of deionized hydrocarbon-free laboratory water in a 40-milliliter Teflon-septum vial, prepared prior to sampling, will be present with the volatile samples at all times during sampling and transportation to the analytical laboratory, and will be subjected to the same analyses as the samples.

- All sample containers will be capped immediately after filling. The exterior of the container will be rinsed with deionized water and dried with paper towels. Samples will be cooled to 4°C by placing them immediately in a chilled, thermally insulated container with a cold source;

- All sample containers will be labeled immediately upon collection with the following information: site; project number; well number; date; time of collection; testing parameters; initials of sampling personnel.

- All equipment used to collect samples for analysis will be either decontaminated before each use or dedicated to a particular sample location after initial decontamination.

- Based on the results of previous sampling and analysis, sampling will progress from the least contaminated well to the most contaminated well.

- All groundwater samples will be immediately placed in a chilled, thermally-insulated container and submitted as soon as possible to a Massachusetts-certified analytical laboratory under Chain of Custody protocol. Information regarding sample holding times is found in Table 1. Information regarding Chain of Custody protocol is found in the Sample Custody Procedure.

DECONTAMINATION

Decontamination will be performed in order to: minimize the spread of contaminants on the Site and from one sampling location to another; reduce the potential exposure of field personnel to contaminants; and to ensure good data quality and reliability. Decontamination of all field analytical testing and sampling equipment will be performed according to the following procedures. These procedures are based on ASTM Designation D 5088-90, USEPA CERCLA QAPP Review Guidance, 1987, and USAEPA Region 4 Environmental Investigation guidelines (SOP & QAM, 2001).

Equipment cleaning procedures include pre-field, field, and post-field decontamination. Non-disposable equipment will be decontaminated after completing each sampling event. In cases of gross contamination (free phase product), rinse water will be contained for proper disposal according to municipal, state, and federal regulations. Decontamination procedures will be monitored through sampling and analysis when quality assurance/quality control checks are necessary.

Equipment will be dedicated to each sampling point and decontamination will be performed at the off-site facility as much as possible.

Decontaminated equipment will be rested on polyethylene sheeting at each sampling point.

Samplers will use new disposable gloves at each sampling point.

Potable water from the public water supply will be used for control rinse water.

A certified laboratory supply of deionized water will be used for decontamination of field testing and sampling equipment and for the collection of rinsate blanks. Deionized water will be stored in Nalgene, glass, or Teflon containers. The storage area containing the deionized water will be separated from the storage area for solvents.

Equipment rinsate blanks will be collected when a quality control check of the decontamination procedure is necessary. This check will not be performed if dedicated equipment is used. One blank will be collected at least once during a sampling event for each different piece of sampling equipment used. Rinsate blanks will be prepared by pouring deionized water over the decontaminated piece of equipment and collecting it in the sample container. The equipment rinsate blank will be analyzed for the same analytes as the samples that have been collected with that piece of equipment.

1.0 MATERIALS

- health and safety equipment;
- laboratory-supplied deionized water;
- phosphate-free detergent (Alconox, Liquinox);
- potable water (municipal water source);
- methanol;
- Hexane;
- Acetone;
- nitric acid rinse solution;
- wash basins;
- inert brushes;
- polyethylene sheeting;
- large heavy duty garbage bags;
- spray bottles;
- zip-lock bags;
- paper towels/Handiwipes;
- disposable gloves.

2.0 DECONTAMINATION PROCEDURES

- Soil and sediment sampling equipment (stainless steel sampling scoop, tool, and bowl, split-spoon and macro-core sampler, knife) will be decontaminated in the field after each use.

- Soil and sediment sampling equipment will be decontaminated as follows: scrubbed with inert brushes in a bucket containing phosphate-free detergent and potable water; rinsed with potable water; rinsed with pesticide grade methanol; and finally rinsed with deionized water. The final potable water and deionized water rinse volumes will equal 5 times the volume of the methanol rinse. The equipment will be allowed to air dry and will be stored in a clean environment until reused.

- Water quality instruments (e.g. Horiba Water Quality Meter), interface probe, down-hole slug test equipment, well development equipment, and other measuring instruments will be decontaminated between uses by rinsing with Alconox or Liquinox, followed by potable water and deionized water rinses. A methanol rinse will be utilized prior to the deionized water rinse in the event of gross contamination such as contact with free-phase product.

- The drill rig, direct-push technology equipment, and all drilling equipment and associated tools, including but not limited to augers, drill casing, drill rods, sampling equipment, and wrenches, will be steam cleaned prior to beginning the drilling on the Site. This cleaning will consist of using a high pressure detergent steam cleaning equipment, followed by a nanograde methanol swabbing if gross contamination was present. This will be followed by a controlled water rinse. Any down-hole equipment (auger flights, rods, sampling equipment, etc.) coming in contact with gross contamination (i.e. free phase product) will be steam-cleaned between uses. Otherwise equipment will be scrubbed manually with potable water and Alconox as needed to remove soil between uses.

- Sampling equipment and probes will be decontaminated in an area covered by polyethylene sheeting adjacent to the sampling location.

- In cases of gross contamination (i.e. free phase product) rinse water will be collected for proper disposal according to municipal, state or federal regulations. Contaminated solids (disposable

gloves, clothing, polyethylene tubing and sheeting, etc.) will be collected and characterized for proper disposal.

- Decontamination procedures will be fully documented in the field notebook. The following information should be recorded: Site location, date, time and weather; sample location where equipment used; location where decontamination was performed; field personnel performing the decontamination; decontamination procedures; disposal of rinse water if necessary; samples collected for QA/QC and analytical results.

- Health and safety procedures associated with decontamination are found in the Health and Safety Plan.

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STANDARD OPERATING PROCEDURE

SAMPLE MANAGEMENT

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CAR-C-001-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	SOT-ALL-C-001-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-C-001-rev.01

APPROVALS

Laboratory General Manager — Date 6/7/2010

Laboratory Quality Manager — Date 6/7/2010 6/4/2010

Department Manager — Date 6/4/10

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION	PAGE
1. Purpose	3
2. Scope and Application	3
3. Summary of Method	3
4. Interferences	3
5. Safety	4
6. Definitions	4
7. Sample Collection, Preservation, and Handling	5
8. Equipment and Supplies	5
9. Reagents and Standards	6
10. Calibration	6
11. Procedure	6
12. Quality Control	12
13. Method Performance	13
14. Pollution Prevention and Waste Management	13
15. References	13
16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.	14
17. Revisions	14
Attachment I – Example COC Form	16
Attachment II – Example SCURF	17
Attachment III – Example SRF	18
Attachment IV – Method Hold Times	19

1. Purpose

The purpose of this Standard Operating Procedure (SOP) is to outline the procedures involved with the receipt, login, staging and disposal of samples received by Pace Analytical Services, Inc, Carolina's.

2. Scope and Application

2.1. The policies and procedures contained in this SOP apply to all personnel involved in the receipt, login, analysis, disposal and transfer of samples.

2.2. A sample acceptance policy is contained within the Procedure section that outlines guidelines for acceptable sample conditions. Any deviation from these guidelines requires detailed documentation within the report, usually as a footnote, or on the chain-of-custody, or SCURF and may require client contact.

3. Summary of Method

3.1. Samples are delivered to the laboratory via several delivery mechanisms. Samples received are checked for adherence to the Sample Acceptance Policy with any discrepancies noted. Discrepancies are communicated to the client for their acknowledgement.

3.2. The Laboratory Information Management System (LIMS, EPIC PRO) assigns all samples with a unique sample number and manages the analyses assigned to each sample.

3.3. Samples are labeled with the appropriate information and staged in refrigerated sample storage coolers if temperature preservation is required or on open shelves for samples not requiring sub-ambient temperature preservation. Samples will remain under these conditions until prepared and / or analyzed.

3.4. Samples and associated sub-samples (digestates, extracts, etc.) are maintained for 30 days after the date received unless otherwise requested by the client or other regulatory agency.

3.5. Samples are disposed of in accordance with local laboratory regulatory requirements and the laboratory's waste handling procedures.

4. Interferences

4.1. Samples may be prone to cross contamination from others within the same delivery group or from other client projects. The sample receiving personnel must make every effort to minimize cross-contamination.

4.2. Preservation checks are one of the most likely situations where cross-contamination may occur. Materials used in the process must be specific to each sample and may not used for multiple samples.

4.3. Samples are stored under specific conditions and in specific locations, typically by container type. However, consideration must be given to samples that are uniquely different from others. Samples that are anticipated to be severely contaminated should be segregated from others in anticipation that the high levels of contaminants may cross-contaminate others in close proximity.

5. Safety

5.1. Hazards and Precautions - Use extreme caution in handling samples and wastes as they may be hazardous. Each reagent and chemical used in this method should be treated as a potential health hazard. Reduce exposure by the use of gloves, lab coats, safety glasses and ventilation hoods. Material Safety Data Sheets (MSDS) are on file and available to all personnel.

5.2. All personnel involved in sample management are responsible for complying with OSHA and DOT regulations. These regulations pertain to the safe handling and/or shipping of the chemicals specified in this procedure. A reference file of Material Safety Data Sheets (MSDS) is available to all personnel. Refer to the Sample Control Supervisor for any questions or concerns related to the safe handling and shipment of hazardous materials.

5.3. Other laboratory safety requirements are contained in the Chemical Hygiene Plan/ Safety Manual. Immediate questions can also be addressed with the local Safety Manager.

6. Definitions

6.1. Definitions of terms found in this SOP can also be found in the Pace Quality Manual. When definitions are not consistent with NELAC defined terms, an explanation is provided in this SOP or the Pace Analytical Services' Quality Manual Glossary.

6.2. **LIMS - Laboratory Information Management System:** a computer system used to manage the flow and traceability of environmental samples and associated data within the laboratory.

6.3. **NELAC - National Environmental Laboratory Accreditation Conference:** a national laboratory-accrediting agency.

6.4. **MSDS - Material Safety Data Sheet:** contains information on chemicals used in the laboratory.

6.5. **COC - Chain-of-Custody:** a form used to record the field identification of samples collected, analyses requested, date and time of collection, sample preservation used, and traceability of samples from time of collection until delivery to the laboratory. This is a legal document.

6.6. **SCURF - Sample Condition Upon Receipt Form:** a form used to record the condition of samples received in the laboratory.

6.7. **Matrix:** the bulk characteristics of a sample. See Table 6.1.

6.8. **SRF – Sample Receipt Form:** form generated by LIMS system after a project is logged in. Contains sample and project information.

6.9. **UN Number** - identification numbers preceded by the letters UN are associated with proper shipping names considered appropriate for international and domestic transportation. These shipping names along with the identification numbers are located in the Federal Register (49CFR172.101).

6.10. **Sample Custody:** a sample is considered to be in someone's custody if:

6.10.1. It is in one's physical possession.

6.10.2. It is in someone's view, after being in someone's physical possession.

6.10.3. It is kept in a secured area, restricted to authorized personnel only.

Table 6.1

NELAC defined matrix	Pace Analytical defined matrix
Aqueous: any liquid sample not defined as drinking water or saline. Includes surface water, groundwater, effluents, TCLP and other extracts.	Waters: includes groundwater, wastewaters, drinking waters, effluents, and any free-flowing liquids.
Drinking water: any aqueous sample that has been designated as potable or potentially potable.	Not assigned as a separate matrix, but samples are assigned to drinking water methods.
Saline/Estuarine: any aqueous sample from an ocean, estuary or other salt water source	Not assigned as a separate matrix from waters.
Non-aqueous liquid: any organic liquid with <15% settleable solids.	Other: Not assigned as a separate matrix from waters.
Biological tissue: any sample from a biological origin such as fish tissue or plant material.	Tissue: would include tissue and plant samples.
Solids: includes soils, sediments, sludges and other matrices with >15% settleable solids	Soils: includes soils, sediments, sludges; other solid materials such as wood, metal, etc. may fall under another heading.
Chemical waste: a product or by product of an industrial process that results in a matrix not defined above.	Oil: includes any non-solid material not classified as waters.
Air: vapor samples including those contained within sorbent tubes, filters or other devices.	Air: vapor samples including those contained within sorbent tubes, filters, or other devices.
No corresponding matrix to wipe; wipes would be included in with solids.	Wipe: includes wipe samples or swabs taken to check for surface contamination.

7. Sample Collection, Preservation, and Handling

7.1. Acceptable sample preservation, containers, and hold times are located in Pace Analytical Services' Quality Manual, the laboratory's method SOP or in the applicable test method. Samples are stored separately from all standards and reagents and any known highly contaminated samples.

NOTE: To avoid contamination, no food or drink products can be located near the areas where samples are unpacked, labeled, or staged.

7.2. Sample Storage – See Section 12.3 for general storage guidelines.

8. Equipment and Supplies

Table 8.1

Equipment/Supplies	Description/ Comments
Sample Labels	
Thermometers	Infrared, digital, NIST traceable
Sample storage cooling units	Capable of holding required storage temperatures
Chain-of-Custody forms	
Sample Condition Upon Receipt Form (SCURF)	
pH Paper	
Label Printer	
LIMS computer system	EPIC Pro
Disposable pipettes	
Sample containers	C&G, SCI/SPEC, Daniels Scientific

9. Reagents and Standards

9.1. All reagents used in this procedure must be labeled with:

- Laboratory reagent identification number
- Unless otherwise noted, the name and concentration of the reagent
- Date the reagent was received, opened and, as needed, prepared
- Person preparing reagent
- Expiration date

9.2. **Reagents**

Table 9.1 – Sample Preservation Reagents

Reagent	Formula	Concentration
Sulfuric Acid	H_2SO_4	Concentrated
Nitric Acid	HNO_3	Concentrated
Hydrochloric Acid	HCl	Concentrated
Sodium Hydroxide	NaOH	50% or Pellets
Sodium Thiosulfate	$Na_2S2O_3 \cdot 5H_2O$	0.02% (0.2g / 1 liter DI water)
Zinc Acetate Solution (for sulfide)		
Methanol	MeOH	Purge and Trap Grade
Ascorbic Acid (for cyanide)		

9.3. For acids, bases and other reagents obtained from other laboratory departments, this information is located in the department reagent preparation log. In the event that these reagents are managed within the Sample Receiving group, the department must maintain its own reagent preparation log.

9.4. Some Pace labs use pre-preserved sample containers. In this case, documentation must be maintained for bottleware and preservation traceability.

10. Calibration

10.1. Thermometers, IR-Guns, and other equipment used for measuring temperatures must be calibrated according to the most current revision of the Support Equipment SOP S-ALL-Q-013.

11. Procedure

11.1. **Sample Receipt**

11.1.1. The laboratory receives client samples via three major methods: mail/commercial delivery service, Pace Analytical courier/field services and hand delivery.

11.1.2. Pace labs use courier services that pick up client samples on either a regular schedule or on an as-needed basis as communicated by Project Managers or by the client.

When the client is present during courier pick-up, the client signs the chain-of-custody (COC) relinquishing custody to the courier. The courier signs the COC as accepting the samples and provides the client with a copy of the COC. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab.

If the client is not present during courier pick-up, the courier signs the COC as accepting the samples and leaves a copy of the COC for the client. If a client also has a sample log in use, the

courier must sign and date the log when the samples are picked up. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab. The date/time of delivery to the lab by the courier is the official date/time received by the lab (analogous to the official date/time of receipt by an outside commercial carrier or courier).

To ensure the sample security, the Pace courier custody seals all the coolers being picked up and the courier vehicle is locked at each client pick-up location.

11.1.3. The chain of custody (COC) (see Attachment I) is signed immediately upon receipt of the samples from the client. If the client drops off the samples or they are picked up by the Pace courier, a copy of the signed COC is given to the client at that time. If samples are received via commercial carrier or mail delivery, the COC should be signed immediately when the cooler or package is opened and ultimately placed in the project file. The delivery date and time is considered the date/time received.

11.1.4. Sample receiving personnel should review the COC for any evidence of rush turnaround requests and analyses with short hold times. Projects that fall under these conditions should be given immediate attention. The project manager responsible for that client should be alerted in the event that they have not already alerted the laboratory to the project as it may be possible that the client did not pre-schedule the project. Once the sample(s) are received and logged into the LIMS, the sample technician and project manager will coordinate the notification and delivery of samples to the laboratory.

11.1.5. **Sample Acceptance Policy** - This section constitutes the laboratory's sample acceptance policy. Copies of this policy should be provided, in the form of a letter, fax or e-mail to each client or sampler, as necessary. Samples are considered acceptable if they meet the following criteria:

- There is proper, full, and complete documentation (i.e. chain-of-custody) including:
  - Unique client sample identification. Sample containers are labeled using unique client sample identifications (traceable to the chain-of-custody or other documentation) on durable, waterproof labels or equivalent.
  - Location of sampling (site), time and date of sample collection;
  - Sampler's name and signature;
  - Preservative used (if any);
  - Sample type (matrix);
  - Requested analyses;
  - Any special analysis requirements
- Appropriate sample containers have been used.
- Holding times have not been exceeded upon receipt (holding times are available in Attachment IV). If they have been exceeded, client permission to proceed is required.
- Adequate sample volume has been received for all tests requested (if not, client permission to proceed is required). For data packages requiring quality control samples to be analyzed on client specific samples, the client must include enough sample to complete the QC samples as well.
- When there is insufficient sample to complete the QC samples and the client does not wish to send more sample or more sample cannot be obtained because of sample volume

available or holding time issues, the lack of appropriate volume or weight is noted as a sample acceptance policy deviation on the final report. Batch quality control samples will be used in place of project-specific quality control samples.

- Samples that require sub-ambient thermal preservation are considered acceptable if they are within +/- 2.0 °C of the required temperature (for samples needing to be at 4.0 °C, the acceptable range is just above freezing to 6.0 °C, as defined by NELAC). The sample cooler (ice chest) temperature is recorded directly on the COC. Samples received outside of this criterion must have a notation on the COC and/or on the Sample Condition Upon Receipt Form (SCURF) indicating that the temperature was outside of criteria.
- Samples that are delivered to the lab immediately after collection are considered acceptable if there is evidence (i.e. samples arrive packed with ice) that the chilling process has begun. If samples arrive at temperatures that are outside these requirements, the client will be notified and analysis will NOT proceed unless otherwise directed by the client. Data will be appropriately qualified.

11.1.6. Open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottle using the infrared (IR) thermometer gun. A representative sample will reflect an "average" condition of the samples in the cooler and, depending on the manner in which they are packed, may not necessarily be in direct contact with the cooling material.

NOTE: If an IR gun is used, the temperature should be taken from an opaque surface such as the bottle label. Measurements taken through a transparent surface (clear or amber glass) may not be reliable and should incorporate a specific temperature correction factor for that surface reading.

11.1.7. Record the temperature on the COC (example in Attachment I) and/or SCURF (example in Attachment II). In addition, record the type of "ice" used for packing the cooler (i.e. wet ice, "blue ice", gel packs, etc.).

11.1.8. If samples within a project are spread over multiple coolers and one or more of the coolers are outside of the temperature criteria, then the contents of the cooler must be itemized and the samples and sample containers affected by the out-of-control temperature must be listed on the SCURF for inclusion with the final report. This itemization must be retained in the project file for future reference.

11.1.9. Unpack the cooler and chain of custody (COC). Organize the samples, grouped by client sample ID, according to the order on the COC. Review COC against samples to make sure the bottles received match the analysis requested. All anomalies must be recorded on the SCURF.

- The items that must be checked at a minimum if the lab receives coolers late or will not unpack a cooler until the following day are; take the temperature of the samples in the cooler, sign the COC and check for short hold analyses.

11.1.10. Discard any ice or water that remains in the cooler and the packing material used to secure the samples. Water or ice should be discarded down a drain that connects to the local sewer. Packing materials should be placed in the garbage. If a sample container was broken, the contents remaining in the cooler MUST be discarded in a manner consistent with the hazardous waste handling standard operating procedure.

11.1.11. **pH Verification Instructions performed by Sample Control**

- The pH of the sample must be verified on all preserved sample bottles requiring pH preservation (see exceptions below).

- Open each preserved bottle (except as noted below). Use a new disposable pipette, a stirring bar or another inert utensil to withdraw a small portion of the sample. Dispense the aliquot on a sample specific narrow-range pH strip and check the pH.

  NOTE: Do not check the pH of samples for coliform, volatiles, TOC, WI-DRO, oil and grease, or hexane extractables (method 1664). These analyses will be checked by the analyst at the bench and should not be opened by sample management personnel

Table 11.1 – General pH Preservation Requirements by Preservative

Sample Preservatives	Sample pH Requirement
HCl	must be less than 2
HN03	must be less than 2
H2SO4	must be less than 2
NaOH	must be greater than 12
ZnAcetate & NaOH	must be greater than 9

- If the pH is not within the required range, indicate the anomaly on the SCURF form or on the COC. If all bottles are unpreserved for a sample, write N/A in the section of the SCURF.

11.1.12. **pH Preservation Adjustments – Insert if adjustments are performed by Sample Control**

- If a sample container does not meet the pH preservation required, the pH of the sample must be recorded on the COC or SCUR. Additional preservative is added so that the preservative content is <1% of the sample container volume. The sample is mixed and the pH is taken again. The new pH reading is also recorded on the COC or SCUR along with the amount, type and lot number of the preservative added. In addition, the sample container is marked with the preservative added, volume added, date, time and initials of the technician. If a metals sample must be acidified, it must be held for 24 hours before it can be processed.

11.1.13. **Total Residual Chlorine Verification Instructions** - Total residual chlorine must be verified at the time of receipt or at the bench as required by the method or individual state regulatory agency for certain analyses (see Table 11.2). Do not check the sample bottles for those analyses listed in 11.1.10.

- Open the appropriate sample container. Utilizing a new disposable pipette, stirring bar or other inert utensil; withdraw a small portion of the sample. Dispense the aliquot on a sample specific residual chlorine test strip.
- If any chlorine is detected, regardless of amount, note the information on the COC, SCURF or analytical bench sheet.

Table 11.2 – Analyses requiring Residual Chlorine Verification

Analyses
Ammonia (NH3)
Nitrate (NO3)
TKN
Cyanides

11.1.14. Note any discrepancies pertaining to samples as defined by the sample acceptance policy detailed above on the COC or SCURF. Any discrepancies involving temperature, preservation, hold time, collection dates and times, sample volume, sample containers, and unclear analysis, must be reported to project management as soon as possible.

11.1.15. For short hold samples, the laboratory is notified and the samples are staged per section 12.3.

Table 11.3 – Analyses with Hold Times Less Than 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Nitrite (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

11.2. Sample Login

11.2.1. Rush projects and/or projects with short holds should be logged in first. After these projects have been addressed, projects should be addressed on a first in, first out basis.

11.2.2. Clients and Project Profiles are created in EPIC Pro as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup*. Projects are logged as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login*.

11.2.3. Tests are assigned as per as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup*, and as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login*.

11.2.4. Generate sample labels and Sample Receipt Form (SRF) (see Attachment III).

- Local SRF generation is as per Section 3 of Training Document T-ALL-IT-005 *EPIC Pro: Login*.
- Local sample label generation is as per Section 2 of Training Document T-ALL-IT-005 *EPIC Pro: Login*.

11.2.5. Attach the sample labels to the appropriate sample bottles.

- Sample Management must make sure all sample ID's match COC. Samples are staged on the counter in rows by Sample ID. All sample containers are recorded on COC.

- Sample labels are printed in Sample Management. One label is printed per sample container, except for VOA sample containers where two labels are printed for each container.
- The label is placed onto the side of the sample container. On VOC sample containers, one is placed onto the side and one is placed onto the cover.

11.2.6. The project manager must review and verify the following information by comparing the COC to SRF. Some of this information may not be provided by the client and those fields should be left blank.

- Report Recipient
- Invoice Recipient
- Additional Report Recipient
- PO#
- Project Name
- Project Number
- Requested Due Date
- Sample ID
- Matrix
- Collection Date & Time
- Received Date & Time
- Analysis: Double check compound lists
- Price
- Region Codes
- Work Region % Split (for Pace internal subcontracted work)
- Has Subbed Work been shipped

11.2.7. If any samples require analyses performed outside of the laboratory, prepare the samples for subcontracting according to the procedures listed in the SOP describing the subcontracting of analytical services SOT-ALL-C-003 most current revision.

11.3. **Sample Storage**

11.3.1. While awaiting login on the day received, samples may remain in the shipping cooler as received prior to login. Once unpacked, samples will be logged into the LIMS in a timely manner and returned to appropriate storage conditions as soon as possible. For the exceptional case where samples are not logged in the day they were received, they must be stored under appropriate temperature-controlled conditions until login takes place. In all cases, the same temperatures must be taken as soon after receipt as possible and the samples stored so as to maintain the required storage conditions while awaiting log-in.

11.3.2. Once logged into the LIMS and labeled, samples are placed in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below:

- Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

- Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved with deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.
- Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:
  - The 5g aliquot is preserved with a stir bar, 10mL of deionized water and a stir bar, or 10mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be immediately extracted with methanol and stored in a segregated volatiles cooler until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

- Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.
- Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

- Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Hexavalent Chromium analysis is needed or the matrix of the samples are solids. If Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler.

11.4. Disposal of Unconsumed Samples

Refer to the laboratory standard operating procedure for waste handling and disposal SOT-S-ALL-S-002, most current revision.

12. Quality Control

12.1. For any sample received at the laboratory that does not meet the sample acceptance, hold time or preservation criteria, the client must be contacted by project management and advised of the situation.

12.1.1. If the client instructs the laboratory to proceed with the analysis, all appropriate personnel/departments must be informed and the client approval must be documented on the SCURF or COC. Data will be appropriately qualified.

12.1.2. The client may also instruct the laboratory to preserve the samples at the laboratory prior to proceeding with analysis. This must be documented on the COC or the SCURF, and should be noted in the final laboratory report.

12.2. All supporting documentation related to sample custody must be retained by the laboratory. This includes; memorandums, fax transmissions, all paperwork received with the COC and copies of email transmissions.

12.3. **Documenting Discrepancies during receipt of samples.**

12.3.1. The following are examples of client discrepancies that need to be documented on the appropriate paperwork (i.e. SCURF).

- Lost samples/insufficient sample volume
- Broken or missing bottles
- Missing COC
- Mislabeled bottles
- Preservation error
- Missing sample related details (date, time, sample type)

12.3.2. Pace sample management discrepancies will be documented on the SCURF, COC or within the project files. Discrepancies attributable to errors and omissions on the part of the laboratory will be addressed and resolved through the formal corrective action process.

13. Method Performance

13.1. Not Applicable

14. Pollution Prevention and Waste Management

14.1. In order to minimize the amount of waste generated during this procedure, analyst should prepare reagents in an amount that may be used in a reasonable amount of time (i.e. before a reagent expires).

14.2. The Chemical Hygiene Plan/Health and Safety Plan contains additional information on pollution prevention.

15. References

15.1. Pace Quality Manual - Pace Analytical Services, Inc., current revision.

15.2. SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, USEPA, current revision.

15.3. National Environmental Laboratory Accreditation Conference (NELAC), Quality Systems Chapter 5; current revision.

15.4. American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1995, Standard Methods for the Examination of Water and Wastewater, A.E. Greenberg, L.W. Clesceri, A.D. Eaton and M.A.H. Franson, eds., 19th ed., American Public Health Association, Washington D. C.

15.5. U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

15.6. U.S. Environmental Protection Agency, 1988, Methods for Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio.

15.7. Code of Federal Regulations, Title 40, 72FR11239; March 12, 2007

15.8. Code of Federal Regulations, Title 40, 72FR14220; March 26, 2007

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I – Chain of Custody, Form F-ALL-Q-020

16.2. Attachment II – Sample Condition Upon Receipt Form, Form F-ALL-C-003

16.3. Attachment III – Sample Receipt Form (SRF), example

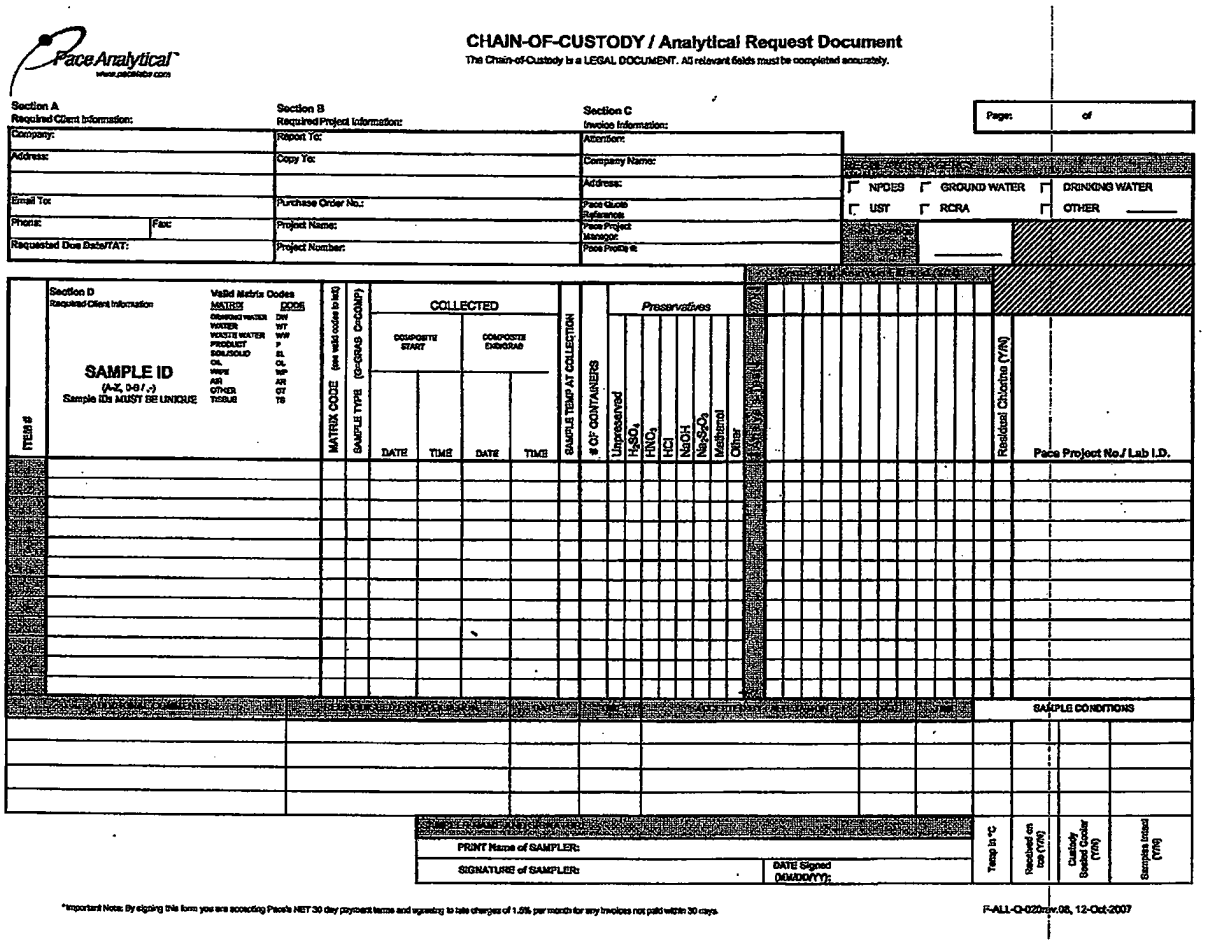
16.4. Attachment IV – Method Hold Time, Container and Preservation Guide

17. Revisions

Document Number	Reason for Change	Date
ALL-C-001-rev.0	New	12Jul2004
ALL-C-001rev.1	Removed information on waste and disposal and referred to ALL-S-002, *Waste Handling* Removed information on subcontracting samples and referred to ALL-C-003, *Subcontracting Samples* Removed information on residual chlorine testing in sample management. Those laboratories that require or perform this test in sample management, will include the information in their local addenda Added a general reference to the type of containers purchased in 9.1.10 Added information on the re-use of returned empty sample containers in section 12.1.4 Added shelf life criteria for trip blanks in 12.1.13 Provided more detail on how to check pH preservation in 12.2.8 Added Attachment I, II, III	30Mar2005

SOT-ALL-C-001rev.00	Converted to SOP Template Removed bottle order preparation details for conversion to separate SOP Template Updated COC form Updated SCUR form Included requirement to add Bottle Lot #s to the Bottle Order Form Added Attachment IV –Method Hold Times	28Dec2006
SOT-ALL-C-001-rev.01	Section 1: removed reference to bottle preparation (material was previously moved to another SOP). Section 4.1: reworded second sentence (SR personnel cannot ensure that there will not be cross-contamination). Section 7: removed responsibility section. Responsibilities are listed throughout the SOP and are listed in the Quality Manual. Renumbered subsequent sections, tables and references in SOP. Added section 9.4 regarding the use of pre-preserved containers. Section 10.1: removed specific ALL SOP reference and added ability to add in lab-specific SOP reference. Table 11.2: added cyanides per Client Services 3P meeting notes. Section 15: updated references where applicable. Section 11.1.3: specified that the delivery date and time is the date received. Added new section 11.1.2 regarding courier service and indicated when the official date/time of receipt is. Renumbered rest of the items in this section. Section 11.1.5: sixth bullet point. Added line where labs can add in lab-specific temperature ranges or language if different from that stated. Section 11.1.6: revised the 'two to five sample average' wording with regards to taking sample temperature to 'a representative sample'. Added red lettered sentence about adding local procedure if different from that listed. Section 11.1.7: removed repetitive sentence regarding taking average temperature. Section 11.1.8: reworded for clarity. Section 11.1.9: added editable bullet point for when coolers are not unpacked until the following day. Section 11.1.12: added in possible template language regarding pH. adjustments. Labs have the ability to use this language or add their own procedure. Section 11.3.1: added language to state that samples should be kept in cold storage as much as physically possible. Table 11.3: added gross alpha and residual chlorine to short hold table. Section 15: added CFR references for Method Update Rule. Attachments: replaced COC, SCUR and SRF with current versions. Attachment IV: replaced existing chart with the revised chart from the Quality Manual.	11Dec2008

Attachment I – Example Chain-of-Custody Form



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CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
Drinking Water	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Attachment II – Example Sample Condition Upon Request Form

Sample Condition Upon Receipt

Pace Analytical

Client Name: _____ Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no **Seals Intact:** ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used _____ **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature _____ **Biological Tissue is Frozen:** Yes No **Date and Initials of person examining contents:** _____

Temp should be above freezing to 6°C **Comments:**

Chain of Custody Present:	☐Yes ☐No ☐N/A	1.	
Chain of Custody Filled Out:	☐Yes ☐No ☐N/A	2.	
Chain of Custody Relinquished:	☐Yes ☐No ☐N/A	3.	
Sampler Name & Signature on COC:	☐Yes ☐No ☐N/A	4.	
Samples Arrived within Hold Time:	☐Yes ☐No ☐N/A	5.	
Short Hold Time Analysis (<72hr):	☐Yes ☐No ☐N/A	6.	
Rush Turn Around Time Requested:	☐Yes ☐No ☐N/A	7.	
Sufficient Volume:	☐Yes ☐No ☐N/A	8.	
Correct Containers Used:	☐Yes ☐No ☐N/A	9.	
-Pace Containers Used:	☐Yes ☐No ☐N/A		
Containers Intact:	☐Yes ☐No ☐N/A	10.	
Filtered volume received for Dissolved tests	☐Yes ☐No ☐N/A	11.	
Sample Labels match COC:	☐Yes ☐No ☐N/A	12.	
-Includes date/time/ID/Analysis Matrix:			
All containers needing preservation have been checked.	☐Yes ☐No ☐N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☐N/A	14.	
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☐N/A	15.	
Trip Blank Present:	☐Yes ☐No ☐N/A	16.	
Trip Blank Custody Seals Present	☐Yes ☐No ☐N/A		
Pace Trip Blank Lot # (if purchased):			

Client Notification/ Resolution: **Field Data Required?** Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

F-ALLC003rev.3, 11September2006

Attachment III – Example Sample Receipt Form

Sample Receipt Form

Pace Analytical Services, Inc.
Indiana

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Sample Acknowledgement Recipients:

Email:

Bill to:

Final Report Recipients:

Line Item Descriptions:
[4] Water Short VOC

Client P O No:
Phone: 1(317)876-5894
Project Manager: Phaedra Pinkasworth
Client Project ID:

Lab Project No: 5018684
Project Deliverables Type: Standard Report
Project Report Due Date: 09/26/08
Profile: 907

Lab Smp ID: 5018684001 Client Smp ID: RW-3:G090908 Collected Date: 09/09/08 11:25
Proj Smp No: 1 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

Auxiliary Data:

Consultant Project Number:	NA	ENFOS Project (AAAAA-0000):	
Site ID/Facility Number:		Phase:	01
Gem Portfolio:	CENTRAL	SubPhase/Task:	03
State of Sample Collection:	OH	Cost Element:	05
Consultant Name:	URS	RCOP:	no
Rush Charges:	0		

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Sub Total - Sample 208364 $27.00

Lab Smp ID: 5018684002 Client Smp ID: RW-4:G090908 Collected Date: 09/09/08 11:00
Proj Smp No: 2 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Attachment IV – Method Hold Time, Container and Preservation Guide

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
2, 3, 7, 8-TCDD	1613B	Soil	8oz Glass	None	90/40 Days
2, 3, 7, 8-TCDD	1613B	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	90/40 Days
2, 3, 7, 8-TCDD	8290	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	30/45 Days
Acidity	SM2310B	Water	Plastic/Glass	≤6°C	14 Days
Alkalinity	SM2320B/310.2	Water	Plastic/Glass	≤6°C	14 Days
Alpha Emitting Radium Isotopes	9315/903.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Anions by IC, including Br, Cl, F, NO_2, NO_3, SO_4	300.0/300.1/ SM4110B	Water	Plastic/Glass	≤6°C	Br, Cl, F, SO_4 (28 Days) NO_2, NO_3 (48 Hours)
Aromatic and Halogenated Volatiles	8021	Soil	5035 vial kit	See 5035 note*	14 days
Aromatic and Halogenated Volatiles	601/602/8021	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Bacteria, Total Plate Count	SM9221D	Water	Plastic/WK	≤6°C; $Na_2S_2O_3$	24 Hours
Base/Neutrals and Acids	8270	Soil	8oz Glass	≤6°C	14/40 Days
Base/Neutrals and Acids	625/8270	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Base/Neutrals, Acids & Pesticides	525.1/525.2	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/30 Days
BOD/cBOD	SM5210B	Water	Plastic/Glass	≤6°C	48 hours
BTEX/Total Hydrocarbons	TO-3	Air	Summa Canister	None	14 Days
BTEX/Total Hydrocarbons	TO-3	Air	Tedlar Bag	None	48 Hours
Chloride	SM4500Cl/9250/ 9251/9252	Water	Plastic/Glass	None	28 Days
Chlorinated Herbicides	8151	Soil	8oz Glass Jar	≤6°C	7/40 Days
Chlorinated Herbicides	8151	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Chlorinated Herbicides	515.1	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	14/28 Days
Chorine, Residual	SM4500Cl	Water	Plastic/Glass	None	15 minutes
COD	SM5220C/ 410.3/410.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Color	SM2120B,C,E	Water	Plastic/Glass	≤6°C	48 Hours
Condensable Particulate Emissions	EPA 202	Air	Solutions	None	6 Months
Cyanide, Reactive	SW846 chap.7	Water	Plastic/Glass	None	28 Days
Cyanide, Total and Amenable	SM4500CN/9010/ 9012/335.4	Water		pH>12 NaOH; ≤6°C; ascorbic acid if Cl present	14 Days, 24 Hours if Sulfide present
Diesel Range Organics	8015	Soil	8oz Glass Jar	≤6°C	14/40 Days
Diesel Range Organics	8015	Water	1L Glass	≤6°C	7/40 Days
Dioxins & Furans	TO-9	Air	PUF	None	30/45 Days
EDB & DBCP	504.1/8011	Water	40mL vials	≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Explosives	8330/8332	Water	1L Glass	≤6°C	7/40 Days
Explosives	8330/8332	Soil	8oz Glass Jar	≤6°C	14/40 Days
Ferrous Iron	SN3500Fe-D	Water	Glass	None	Immediate
Flashpoint/Ignitability	1010/1030	Water	Plastic/Glass	None	28 Days
Fluoride	SM4500Fl-C,D	Water	Plastic	None	28 Days
Gamma Emitting Radionuclides	901.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Gas Range Organics	8015	Water	40mL vials	pH<2 HCl	14 Days
Gasoline Range Organics	8015	Soil	5035 vial kit	See 5035 note*	14 days
Gross Alpha (NJ 48Hr Method)	NJAC 7:18-6	Water	Plastic/Glass	pH<2 HNO_3	48 Hrs
Gross Alpha and Gross Beta	9310/900.0	Water	Plastic/Glass	pH<2 HNO_3	180 days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Haloacetic Acids	552.1/552.2	Water	40mL Amber vials	NH_4Cl; ≤6°C	14/7 Days
Hardness, Total ($CaCO_3$)	SM2340B,C/130.1	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Hexavalent Chromium	7196/218.6/ SM3500Cr	Water	Plastic/Glass	≤6°C	24 Hours
Hydrogen Halide & Halogen Emissions	EPA 26	Air	Solutions	None	6 Months
Lead Emissions	EPA 12	Air	Filter/Solutions	None	6 Months
Low Level Mercury	1631	Water	Glass	BrCl	90 days (if preserved and oxidized)
Mercury	7471	Soil	8oz Glass Jar	≤6°C	28 days
Mercury	7470/245.1/245.2	Water	Plastic/Glass	pH<2 HNO_3	28 Days
Metals	7300/7303	Air	Filters	None	6 Months
Metals (and other ICP elements)	6010	Soil	8oz Glass Jar	None	6 months
Metals (and other ICP elements)	6010/6020/200.7/ 200.8	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Methane, Ethane, Ethene	RSK-175	Water	40mL vials	HCl	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Summa Canister	None	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Tedlar Bag	None	48 Hours
Nitrogen, Ammonia	SM4500NH3/350.1	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Kjeldahl	SM4500-Norg; 351.1/351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrate	SM4500-NO3/ 352.1	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Nitrate & Nitrite	SM4500-NO3/ 353.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrite	SM4500-NO2/ 353.2	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Organic	SM4500-Norg/ 351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Non-Methane Organics	EPA 25C	Air	Summa Canister	None	14 Days
Non-Methane Organics	EPA 25C	Air	Tedlar Bag	None	48 Hours
Odor	SM2150B	Water	Glass	≤6°C	24 Hours
Oil and Grease/HEM	1664A/SM5520B/ 9070	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Organochlorine Pesticides & PCBs	TO-4	Air	PUF	None	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082/608	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Oxygen, Dissolved (Probe)	SM4500-O	Water	Glass	None	15 minutes
Paint Filter Liquid Test	9095	Water	Plastic/Glass	None	N/A
Particulates	PM-10	Air	Filters	None	6 Months
Permanent Gases	EPA 3C	Air	Summa Canister	None	14 Days
Permanent Gases	EPA 3C	Air	Tedlar Bag	None	48 Hours
pH	SM4500H+B/9040/ 9041/150.2	Water	Plastic/Glass	None	15 minutes
Phenol, Total	420.1/420.4/9065/ 9066	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Phosphorus, Orthophosphate	SM4500P/365.1/365.3	Water	Plastic	Filter; ≤6°C	Filter within 15 minutes, Analyze within 48 Hours
Phosphorus, Total	SM4500P/ 365.1/365.3/365.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Polynuclear Aromatic Hydrocarbons	TO-13	Air	PUF	None	7/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Soil	8oz Glass Jar	≤6°C	14/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Radioactive Strontium	905.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-226 Radon Emanation Technique	903.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-228	9320/904.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Silica, Dissolved	SM4500Si-D	Water	Plastic	≤6°C	28 Days
Solids, Settleable	SM2540F	Water	Glass	≤6°C	48 Hours
Solids, Total	SM2540B	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Dissolved	SM2540C	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Suspended	SM2540D	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Volatile	SM2540E	Water	Plastic/Glass	≤6°C	7 Days
Specific Conductance	SM2510B/9050/120.1	Water	Plastic/Glass	≤6°C	28 Days
Stationary Source Dioxins & Furans	EPA 23	Air	XAD Trap	None	30/45 Days
Stationary Source Mercury	EPA 101	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source Metals	EPA 29	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source PM10	EPA 201A	Air	Filters	None	6 Months
Stationary Source Particulates	EPA 5	Air	Filter/Solutions	None	6 Months
Sulfate	SM4500SO4/9036/ 9038/375.2/ASTMD516	Water	Plastic/Glass	≤6°C	28 Days
Sulfide, Reactive	SW-846 Chap.7	Water	Plastic/Glass	None	28 Days
Sulfide, Total	SM4500S/9030	Water	Plastic/Glass	pH>9 NaOH; ZnOAc; ≤6°C	7 Days
Sulfite	SM4500SO3	Water	Plastic/Glass	None	15 minutes
Surfactants	SM5540C	Water	Plastic/Glass	≤6°C	48 Hours
Total Organic Carbon (TOC)	SM5310B,C,D/ 9060	Water	Glass	pH<2 H_2SO_4 or HCl; ≤6°C	28 Days
Total Organic Halogen (TOX)	SM5320/9020/ 9021	Water	Glass; no headspace	≤6°C	14 Days
Tritium	906.0	Water	Glass	pH<2 HNO_3	180 days
Turbidity	SM2130B/180.1	Water	Plastic/Glass	≤6°C	48 Hours
Uranium Radiochemical Method	908.0/ASTM D5174-97	Water	Plastic/Glass	pH<2 HNO_3	180 days
Volatiles	TO-14	Air	Summa Canister	None	30 Days
Volatiles	TO-14	Air	Tedlar Bag	None	48 Hours
Volatiles	TO-15	Air	Summa Canister	None	30 Days
Volatiles	8260	Soil	5035 vial kit	See 5035 note*	14 days
Volatiles	8260	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Volatiles	624	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days (7 unpreserved)
Volatiles	524.1/524.2	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Alaska DRO	AK102	Soil	8oz Glass	≤6°C	14/40 Days
Alaska DRO	AK102	Water	1L Glass	pH<2 HCl; ≤6°C	14/40 Days
Alaska RRO	AK103	Soil	8oz Glass	≤6°C	14/40 Days
Alaska GRO	AK101	Soil	5035 vial kit	See 5035 note*	14 Days
Alaska GRO	AK101	Water	40mL vials	pH<2 HCl; ≤6°C	14 Days

5035 Note: 5035 vial kit typically contains 2 vials water, preserved by freezing **or**, 2 vials aqueous sodium bisulfate preserved at 4°C, **and** one vial methanol preserved at ≤6°C **and** one container of unpreserved sample stored at ≤6°C.

Attachment IV – HOLD TIMES AND CHLORINE CHECKS

Analyses with Hold Times < 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	
48 Hours	Nitrite (unpreserved)	
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

Analyses Requiring Residual Chlorine Verification

Analyses	Details
Ammonia (NH_3)	Nutrient Bottle
Nitrate (NO_3)	Nutrient Bottle
Total Kjeldahl Nitrogen (TKN)	Nutrient Bottle
Total Phosphorus (TP)	Nutrient Bottle
Nitrate (unpreserved)	Unpreserved Bottle
Cyanide	

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STANDARD OPERATING PROCEDURE

Waste Handling and Management

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CHR-S-002-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	S-CHR-S-002-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-S-002-rev.02

APPROVALS

Jeff Graham, Laboratory General Manager — Date 9/27/11

Cheryl Johnson, Laboratory Quality Manager — Date 9/22/2011

Cheryl Johnson, Laboratory Hazardous Waste Coordinator — Date 9/22/2011

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION PAGE

1. Purpose 3
2. Scope and Application 3
3. Summary of Method 5
4. Interferences 5
5. Safety 5
6. Definitions 5
7. Sample Collection, Preservation, and Handling 8
8. Equipment and Supplies 8
9. Reagents and Standards 9
10. Calibration 9
11. Procedure 9
    - 11.1. Generator EPA Identification Number 10
    - 11.2. Waste Generation and Class 11
    - 11.3. Waste Classification 11
    - 11.4. Waste Streams 12
    - 11.5. Waste Determination 12
    - 11.6. Laboratory Generated Satellite Waste and Sample Disposal 14
    - 11.7. Transferring Waste to Accumulation Area 15
    - 11.8. Soil Samples 15
    - 11.9. Elementary Neutralization 15
    - 11.10. Waste Storage Container Requirements 16
    - 11.11. Waste Documentation and Reporting 17
12. Quality Control 17
13. Method Performance 17
14. Pollution Prevention and Waste Management 18
15. References 18
16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc. 18
17. Revisions 18

1. Purpose

1.1. Pace Analytical Services, Inc. (Pace) acknowledges its obligation to the responsible management of the environment and its resources. Pace Management is committed to operating in such a way that meets or exceeds the state and federal laws governing waste management and encourages the use of best practices to reduce, reuse and recycle waste material where possible. This Standard Operating Procedure (SOP) documents the systems, processes and procedures that Pace Charlotte uses to manage generated wastes.

1.2. It is Pace's policy to minimize the amount of hazardous waste it produces and to reduce the hazardous properties of those wastes whenever practical within regulatory compliance. This can be achieved by periodic auditing of all processes producing hazardous waste; reduction of sample volume delivered by the client; return of excess sample material to clients whenever practical and economical; investigation of new technologies that might require smaller volumes of sample, or produce fewer or less hazardous by-products; implementation of lab cleaning procedures that reduce the volume of cleaning residue; recycling of hazardous materials; and investigation of new treatment technologies that are comprehensively destructive or are effective in reducing the volume or hazardous qualities of the wastes produced.

2. Scope and Application

2.1. This SOP is applicable to all processes at Pace Charlotte that involve generated waste, and is designed to assist its operations in adhering to regulations set forth in the following federal statutes: Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), Toxic Substances Control Act (TSCA), and DOT Title 49, and Transportation (parts 100-199). Particular attention is given to local pretreatment standards covering discharges to publicly owned treatment works (POTW) when performing elementary neutralization on acidic and basic waste. The local standards are based in part upon provisions in the National Pretreatment Standards and Prohibited Discharge Standards.

2.2. The degree to which RCRA regulations apply to Pace facilities is dependent upon the generator status of the operation. Under the federal rules (state requirements may be more stringent or give the classes a slightly different name) there are three different classes of hazardous waste generators based upon the amount of waste generated in a month to month time frame.

Table 2.3. Waste Generator Class Limits

Hazardous Waste Generator Class	***Quantity of Hazardous Waste Generated per Month***	**Generated Monthly Acute Hazardous Waste**	**Maximum Allowable Hazardous Waste Quantity on-site**	**Maximum Permitted Waste Accumulation Time**
Cond. Exempt Small Quantity	*<100kg*	<1 kg	<1000kg	Unlimited
Small Quantity	*100-1000kg*	<1 kg	<6000kg	180 days (270 days if the waste must be sent >200 miles to TSDF)
Large Quantity	*>1000kg*	>1kg	Unlimited	90 days

Table 2.4. RCRA Requirements for Labs as a Function of Generator Status.

Requirement (40CFR)	CESQG	SQG	LQG
Waste Determination (262.11)	Applicable	Applicable	Applicable
Generation Rate Limits (261.5 and 262.34)	<100 kg/mo	100-1,000 kg/mo	1,000 kg/mo or greater
Accumulation Quantity Limit w/o Permit (261.5 and 262.34)	Not to exceed 1,000 kg at any time. Not to exceed 1 kg acute at any time	not to exceed 6,000 kg at any time	No limit
Accumulation Time (261.5 and 262.34)	No limit	180 days or 270 if waste is to be transported over 200 miles.	90 days
EPA ID Number (262.12)	Not required***; possible state requirement	Required	Required
Mark Containers with Start Date (262.34)	Not applicable	Applicable	Applicable
Mark Containers "Hazardous Waste" (262.34(a))	Not applicable	Applicable	Applicable
Air Emission Standards 40 CFR 265 Subpart CC	Not applicable	Not applicable	Applicable
Satellite Accumulation (262.34(c))	Not applicable	Applicable	Applicable
Use Manifests (262, Subpart B)	Not required; possible state requirement	Required	Required
Exception Reporting (262.42)	Not required	Required after 60 days. No TSDF notification requirement.	Required after 45 days. Notification of TSDF within 35 days.
Biennial Report (262.41)	Not required	Not required; possible state requirement	Required
Contingency Plan (265, Subpart D)	Not required, but OSHA (29 CFR 1910.38) requires emergency planning	Basic planning required in accordance with the standards in 262.34(d)(4) and (5) and 265, Subpart C as well as OSHA regulations	Full written plan in accordance with 265 Subpart D, is required by 262.34(a)(4) and OSHA regulations
RCRA Personnel Training (262.34 and 265.16)	Not required, but recommended	Basic training required by 262.34(d)(5)(iii)	Full compliance with the training requirements in 265.16 is required by 262.34(a)(4)
Storage Requirements (without permit) (262.34 and 265)	None, but OSHA regulations under 29 CFR 1910, Subparts H and N, apply, particularly 29 CFR 1910.106	Compliance with technical standards in Part 265, Subparts I and J; for containers and tanks is required by 262.34(d)(2) and (3) and OSHA regulations	Compliance with technical standards in Part 265, Subparts I, J, W, and DD, is required by 262.34(a)(1) and OSHA regulations
Recordkeeping Requirements (262.40)	Waste determinations and generation log required (notification of regulated waste activity, training records, manifests, and land disposal restriction notifications recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, and correspondence with local emergency responders (written contingency plan, weekly container inspection & periodic equipment maintenance logs, and RCRA training records recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, biennial reports, correspondence with local emergency responders, RCRA training records, and written contingency plan required (weekly container inspection is required & periodic equipment maintenance logs is recommended)
Waste "Designated Facility"	State-approved or RCRA permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler
Land Disposal Restrictions (268.7)	Possible state requirement	Applicable	Applicable

3. Summary of Method

3.1. Pace facilities that generate waste must initially contact the EPA to obtain an ID number. Each unique type of generated waste is classified and characterized into waste streams according to procedures in 40 CFR 261. The amount of waste the facility generates determines the Generator Status of a lab, which in turn determines how long and how much waste can accumulate. Pace Charlotte is ultimately responsible for the waste it generates, and is required obey any and all regulations during the process of creating, accumulating, disposing, and releasing waste to a TSDF for final disposal. Documentation is kept to prove all regulations have been obeyed.

4. Interferences

4.1. Not applicable to this SOP.

5. Safety

5.1. The laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A formal safety plan is also available to all employees. Gloves and eye protection should be routinely worn when handling reagents or samples. When qualified employees are transferring wastes, additional protection such as goggles, face shield, and lab apron are recommended.

5.2. MSDS sheets are located in a central location and should be consulted prior to handling samples and standards.

5.3. A hazard assessment must be completed per S-ALL-S-001 ***Hazard Assessments*** for waste areas to ensure proper PPE are utilized.

6. Definitions

6.1. Definitions of terms found in this SOP are described in the Pace Analytical Services Quality Manual, Glossary Section unless as noted below.

6.2. **Acutely Hazardous Waste** - A waste which is hazardous as identified with an (H) Hazard Code in the lists of Hazardous Waste in 40 CFR Part 261, Subpart D, Sections 261.30, 261.31 and 261.33.

6.3. **Clean Air Act** - The Federal Clean Air Act, 42 U.S.C. 7401, and amendments thereto amending 42 U.S.C. 1857 et.seq.

6.4. **Conditionally Exempt Small Quantity Generator** - A generator who produces no more than 100 kilograms of hazardous waste or one kilogram of acutely hazardous waste (or a total of 100 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar month. The total amount of hazardous waste which may be accumulated on-site is 1000 kilograms.

6.5. **Confined Space** – A space that is large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and is not designed for continuous employee occupancy.

6.6. **Container** - Any device material is stored, transported, treated, disposed of, or otherwise handled.

6.7. **Contingency Plan** - A document setting out an organized, planned, and coordinated course of action to be followed in case of fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

6.8. **Designated Hazardous Waste Storage Area** - Area used to hold hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere. This is the storage area into which hazardous waste from the laboratory (e.g., satellite waste) is moved.

6.9. **DOT** - The United States Department of Transportation.

6.10. **DTSC** – Department of Toxic Substances Control

6.11. **Elementary Neutralization Unit** – A device which: (1) is used for neutralizing wastes which are hazardous only because they exhibit the corrosivity characteristic defined in 40 CFR 261.22 or are listed in Subpart D of Part 261; and (2) meets the definition of tank, container, transport vehicle, or vessel in 40 CFR 260.10.

6.12. **EPA** - The United States Environmental Protection Agency.

6.13. **EPA Hazardous Waste Number** - The EPA number assigned to each EPA hazardous waste identified in 40 CFR Part 260, Subpart D - Lists of Hazardous Wastes.

6.14. **EPA Identification Number** - The site-specific number assigned to each generator, transporter, and TSDF upon approval of a notification form.

6.15. **Federal Clean Water Act** - 33 U.S.C. 1251, et. seq.

6.16. **Foreseeable Emergency** - Any fire, explosion, or sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water, which could threaten human health or the environment.

6.17. **Generator** - Any person, by site who owns or operates a facility where hazardous waste is generated, i.e. Pace Analytical Services (Pace).

6.18. **Hazardous Waste Coordinator** - The Pace employee responsible for creating, guiding, and implementing all hazardous waste management operations.

6.19. **Hazardous Waste** - As defined in 40 CFR Part 261, Subparts B and C, a solid, semi-solid, liquid or contained gaseous waste, or any combination of these wastes:

6.19.1. Which, because of either quantity, concentration, physical, chemical, or infectious characteristics may:

6.19.1.1. Cause or contribute to an increase in mortality or an increase in irreversible or incapacitating reversible illness; or

6.19.1.2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise mismanaged

6.19.2. Or which has been identified as having a characteristic of hazardous waste by the EPA using the criteria established under 40 CFR Part 261, Subpart C, or as listed under Sections 261.32, 261.32, and 261.33. Such wastes include, but are not limited to, those which are reactive, toxic, corrosive, ignitable, irritants, strong sensitizers or which generate pressure through decomposition, heat or other means. Such wastes do not include radioactive substances that are regulated by the Atomic Energy Act of 1954, as amended. A Waste is considered hazardous if it is listed or it fits into one of four categories. These categories are as follows:

6.19.2.1. Ignitable – (40CFR261.21, Waste Code D001) Having a flash point of less than 60°C/140°F.

6.19.2.2. Corrosive – (40CFR261.22, Waste Code D002) Having a pH of less than 2.0 or greater than 12.5.

6.19.2.3. Reactive – (40CFR261.23, Waste Code D003) Reactive wastes exhibit one or more of the following characteristics:

6.19.2.3.1. It is unstable and can undergo a violent change without detonating.

6.19.2.3.2. It can react violently with water.

6.19.2.3.3. When mixed with water it can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

6.19.2.3.4. It is cyanide or sulfide bearing waste that, when exposed to pH conditions between 2.0 and 12.5, can generate gases, vapors, or fumes that can present a danger to human health or the environment.

6.19.2.3.5. It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

6.19.2.3.6. It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

6.19.2.3.7. It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

6.19.2.4. EPToxic - A solid waste is EPToxic if, after being subjected to the EP Toxicity extraction, or TCLP analysis, the extract contains any of the listed contaminants in concentrations above the limits shown in Attachment 2. It is listed as a hazardous waste by the EPA (via 40 CFR 261.30, 261.31, 261.32, and 261.33).

6.20. **Hazardous Waste Constituent** - A substance, compound, or element listed as hazardous waste in EPA 40 CFR 261.

6.21. **Lab Pack Material** - A hazardous waste that does not match a listed Pace waste stream category.

6.22. **Large Quantity Generator** - Any generator who generates at a rate greater than 1000 kilograms of hazardous waste per month.

6.23. **Manifest** - As defined in 40 CFR Part 262, Subpart B, namely "the form used for identifying the origin, quantity composition, routing and destination of hazardous waste."

6.24. **Sample** - Except as provided below in 6.24.7, a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or composition, is not subject to any requirements of 40 CFR Part 261.5 or Parts 262 through 267 or Part 270 or Part 124 or to the notification requirements of Section 3010 of RCRA, when:

6.24.1. The sample is being transported to a laboratory for the purpose of testing; or

6.24.2. The sample is being transported back to the sample collector after testing; or

6.24.3. The sample is being stored by the sample collector before transport to a laboratory for testing; or

6.24.4. The sample is being stored in a laboratory before testing; or

6.24.5. The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

6.24.6. The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

6.24.7. In order to qualify for the exemption in 6.24.1 and 6.24.2 above, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

6.24.7.1. Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

6.24.7.2. Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

6.24.7.2.1. Assure that the following information accompanies the sample:

6.24.7.2.1.1. The sample collector's name, mailing address, and phone number;

6.24.7.2.1.2. The laboratory's name, mailing address, and phone number;

6.24.7.2.1.3. The quantity of the sample;

6.24.7.2.1.4. The date of shipment; and

6.24.7.2.1.5. A description of the sample.

6.24.7.2.2. Package the sample so that it does not leak, spill, or vaporize from its packaging.

6.24.7.2.3. This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in 6.22 above.

6.25. **Satellite Waste or Laboratory Satellite Waste** - Hazardous wastes created by Pace, as a result of organic or inorganic extractions, digestions, and analyses.

6.26. **Satellite Waste Container** - Any portable device used to accumulate laboratory generated waste prior to transfer to the hazardous waste storage area.

6.27. **Small Quantity Generator** - A generator who produces no more than 1000 kilograms of hazardous waste (or a total of 1000 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar monthly. The total amount of hazardous waste which may be accumulated on-site is 6000 kilograms.

6.28. **TSDF** - A Treatment/Storage/Disposal Facility.

6.29. **Universal Waste** – Commonly used items that are hazardous but can be recycled. These include fluorescent lights, computer monitors, etc.

6.30. **Waste Stream** - The generic profile of chemical and physical properties that satellite wastes exhibit.

7. Sample Collection, Preservation, and Handling

7.1. Not applicable to this SOP.

8. Equipment and Supplies

The following equipment is mandatory under RCRA guidelines unless otherwise denoted. Periodic review (not to exceed monthly) of availability of equipment and supplies below should be conducted to maintain an adequate and viable supply.

8.1. **Chemical Spill Control Neutralizers**: The waste room stores three types of bulk dry spill neutralizers: solvent, acid and base. They may be utilized by placing the dry neutralizer onto a liquid chemical spill. Neutralization is indicated by a prevalent color change.

8.2. **Communication Device**: Required for emergency notification of spill, fire, etc.

8.3. **Drums**: Common types of waste drums used for storing and shipping hazardous wastes are polyethylene, steel-polyethylene lined, and steel. Sizes are typically 5gal, 15gal, 30gal, and 55gal. Drums used for liquids typically are closed top with an opening to pour the solvent through a funnel, while drums used for solids or lab packs are open-top.

8.4. **Emergency Drench Shower**: Shower should deliver water approximately twenty gallons per minute with a non-interruptible flow. It may be turned on by pulling the shower handle down. It may be turned off by pushing the handle back to the 'off' position.

8.5. **Emergency Lighting** (as needed): The waste room is outfitted with emergency lighting that goes on if power fails.

8.6. **Exit Signs** (as needed): Exit signs are provided on all waste room doors. These signs are self-illuminating.

8.7. **Fire Alarm Pull Station**: A fire alarm pull station must be in close proximity to the hazardous waste room. The alarm may be activated by pulling the switch. Other alarm systems may be utilized as long as all personnel are trained on the procedures.

8.8. **Fire Extinguisher**: An extinguisher with a rating appropriate to the waste being stored in the area must be in close proximity to the hazardous waste room.

8.9. **Labels**: A multitude of labels are provided to ensure compliant labeling. They may be purchased or prepared manually.

8.10. **Liquid Chemical Neutralizers**: Liquid chemical neutralizers (base and acid) may be used to neutralize a contained hazardous liquid. This may be done by slowly adding the neutralizer to the liquid.

8.11. **Spill Control Pads**: Spill pads are used to soak up hazardous liquids. They do not neutralize spills. They are especially effective for cleaning up oily materials. Various pads are available for aqueous and petroleum based liquids.

8.12. **Spill Control Pillows**: Spill pillows may be used to soak up large amounts of liquid chemical spills. No neutralization occurs.

8.13. **Spill Dikes**: vary depending on the size and type of room: Their purpose is to encircle a spill, barring the spread of a hazardous chemical. They will also absorb liquids, but do not neutralize spills.

9. Reagents and Standards

9.1. Not applicable to this SOP.

10. Calibration

10.1. Not applicable to this SOP.

11. Procedure

11.1. All Pace facilities that generate hazardous waste must have a Generator's US EPA Identification Number. The ID number is obtained through the applicable EPA region's office by completing EPA form 8700-12, and must be completed before generating any hazardous waste.

11.1.1. Pace only utilizes transporters and treatment, storage, or disposal facilities (TSDFs) that have EPA identification numbers for hazardous waste handling and meet the TSDF transfer requirements.

11.1.2. A new ID number is necessary when changing locations as the number is tied to the facility address.

11.1.3. This facility's US EPA Identification Number is NCD986205086.

11.2. The laboratory generates wastes originating from several source types: materials and chemicals used to prepare and analyze samples (e.g., solvents, acids), unconsumed liquid and solid samples, certain types of batteries, mercury from lamps and broken thermometers and automobile waste. Unconsumed samples may include laboratory-contaminated sample residue (both liquid and soil) generated as part of digestion, extraction, etc., procedures used to prepare samples for analysis.

11.2.1. This facility is classified as a Small Quantity Generator.

11.3. Hazardous waste classification is the most critical step in establishing an effective, compliant waste-handling program. Laboratory wastes are classified using the criteria set forth under RCRA for ascertaining non-hazardous versus hazardous status, and this criterion is listed in the definition of hazardous waste in 6.19.

11.4. The following are the waste streams resulting from materials and chemicals used in the laboratory operation. Applicable information for each is given pertaining to packing, labeling, or listing on a manifest. A description of how the wastes are created, and the preferred method of final disposal for each, is included. The overriding principle in hazardous waste classification is application of a conservative formula based on all known or suspected hazards related to a waste material. While this formula may result in some materials being disposed as hazardous when in fact, they are non-hazardous (i.e., false positive), the formula will not be compromised in the interest of reducing the amount of waste produced. This will minimize any risk of a material being disposed of erroneously as non-hazardous when it, by definition, is a hazardous waste.

11.4.1. **Corrosive waste** is generated in the majority of the departments in the laboratory. This waste stream consists primarily of spent or excess aqueous reagent solutions generated from preservatives or other corrosive solutions generated in the course of analysis. The predominant corrosives include hydrochloric acid, nitric acid and sulfuric acid, but corrosives also include bases. Varying concentrations of metals may be present dependent upon the composition of the reagents added. This waste stream only has the hazardous quality of being corrosive; therefore, if a waste has any additional hazardous waste quality (i.e. Toxic or Ignitable) it cannot be mixed with this stream. This stream is treated onsite.

Corrosive Waste	
DOT Shipping Name	RQ Waste, Corrosive Liquid, N.O.S (i.e. corrosive material)
EPA Waste #	D002
Container	Glass sample containers
Average pH	<2.0, >12.5
Disposal Method	Treatment by Neutralization
Label	Corrosive

11.4.2. The **Chlorinated Waste Stream** consists primarily of methylene chloride with a very small amount of other organic solvents derived from extraction procedures performed on samples and from rinsing glassware. As a best practice, effort is made to have this waste stream as pure as possible in order to offer for recycling.

Chlorinated Solvents	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S (i.e. dichloromethane, acetone, methanol)
EPA Hazard Codes	F001

Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Chlorinated

11.4.3. The **Flammable Solvent Waste Stream** consists primarily of hexane, acetone, methanol, and used pump oil derived from extraction procedures performed on samples, rinsing glassware, and performing instrumentation maintenance. This waste stream must be strictly segregated from the chlorinated waste stream.

Flammable Solvent Waste	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S. (i.e. acetone, methanol)
EPA Waste #	D001, F003
Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Flammable

11.4.4. **Universal Waste Stream** includes mercury containing fluorescent light bulbs and used batteries and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Universal Waste Stream	
DOT Shipping Name	Universal Waste
EPA Waste #	Lab Pack
Container	Lab Pack
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Universal Waste

11.4.5. **Hazardous Soil Waste Stream** includes unused samples with methanol and sodium bisulfate preservation and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Hazardous Soil Waste Stream	
DOT Shipping Name	Hazardous Solid (methanol)
EPA Waste #	F003
Container	55 Gallon Drum
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Flammable

11.5. Some waste can become complicated when attempting to classify as non-hazardous or hazardous due to the list of hazardous constituents contained in sections 261.30, 261.31, 261.32, and 261.33 of 40 CFR including a majority of analytes of interest routinely analyzed in Pace laboratories. Definitions have been established for each of the F, K. P, and U lists covering hazardous waste originating from non-specific sources, specific sources and discarded commercial chemical products, off-specification species, container residues, and spill residues. The application of listed hazardous

wastes and substances is intended for manufacturing processes involving pure products, by-products, wastes generated as part of the production process and cleanup of materials contaminated from a spill of the listed commercial chemical product or manufacturing chemical intermediate. See Attachment I for common F-listed wastes.

11.5.1. Hazardous waste classification of unconsumed samples by listed hazardous waste criteria is not commonly applied in laboratory operations. Examples of sample types which would be identified as listed hazardous wastes include the following:

11.5.1.1. Samples containing 5% or more (by volume) of halogenated and non-halogenated "spent solvents:" (e.g., drum sample with > 10% TCE).

11.5.1.2. Pure product and two phase solution samples containing a listed chemical product or manufacturing intermediate (e.g., drum sample)

11.5.1.3. Samples from specific sources listed in section 261.32 (e.g., bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote and/or pentachlorophenol - K001).

11.5.1.4. Samples representing any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having a generic name listed in section 261.33, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in section 261.33.

11.5.2. For the wastes listed in 11.5.1.1 and 11.5.1.2, disposal can be achieved by individually lab packing them with other compatible hazardous wastes.

11.5.3. The remaining two sample types in 11.5.1.3 and 11.5.1.4 would also require lab packing for disposal. However, it is important to note that in order for the laboratory to ascertain that the samples were derived from a specific listed source or from a spill of a listed chemical, they must be so informed by the industrial concern or lead agency (e.g., EPA, state regulators) submitting the sample for analysis. If a water or soil sample contains a listed hazardous waste substance whose origin is unknown or uncertain to the lead agency, then that sample is not classified as a listed hazardous waste. Rather in this case, determination of a hazardous waste classification can only be obtained by the waste exhibiting a characteristic of hazardous waste (i.e., ignitability, corrosivity, reactivity, EP toxicity).

11.5.4. Due to the fact that the majority of samples analyzed by Pace do not meet the well-defined criteria for identifying "listed" hazardous waste, disposal classification of unconsumed samples will be based upon characteristics of hazardous waste.

11.5.4.1. Non-Hazardous - Analysis results indicate an absence of contaminants; unless contaminants listed under the hazardous disposal categories are parts of the requested sample analysis.

11.5.4.2. Hazardous – Analysis results indicate presence of contaminants (Attachment II) or sample analysis requires hazardous materials and contaminants. Samples in this category are segregated from others and disposed of as hazardous according to laboratory procedures.

11.5.4.3. PCB Waste - Generated exclusively by samples contaminated with greater than trace levels of polychlorinated biphenyls ($\geq$ 50 ppm). Samples containing 50 ppm (total) or higher of PCBs must be segregated and disposed of as PCB waste.

11.5.4.4. Waste Oil/Paint - Samples which are predominantly of an oil matrix (e.g., highly viscous organic liquid) or paint (solvent and pigment blend) are segregated and disposed in a separate container. Though these samples are defined as nonhazardous, oil samples are a special case and never disposed as nonhazardous.

Note: Bottle caps and liners do not typically contain sample residuals and can be disposed of directly through the non-hazardous building refuse.

11.5.5. USDA Regulated Soil is a special case of sample, and is strictly controlled under APHIS quarantine regulations 7 CFR 330 because it can readily provide a pathway for a variety of dangerous organisms into the United States. The movement of soil into the United States from foreign sources is prohibited, and movement within the continental U.S. (see Attachment III) is restricted unless authorized by APHIS under specific conditions or safeguards. The importation of soil from foreign sources and/or the interstate movement is authorized by APHIS solely under strictly controlled circumstances described in a permit and/or compliance agreement.

11.5.5.1. Any laboratory that plans to receive soil from a regulated area shown in Attachment III must first apply and receive a Soil Permit from the USDA.

11.5.5.2. All samples when received must be clearly marked as "USDA Regulated Soil" or some such marking to distinguish them from soils that are not from infested areas.

11.5.5.3. Any laboratory that receives soil from a foreign source or those shown in Attachment III, must either incinerate or autoclave any unconsumed samples and all apparatus used to handle the soil, including weigh boats, gloves, wooden spatulas, etc.

11.5.5.4. Refer to SOP CHR-L-005, current revision, for additional handling procedures.

11.6. Consolidation of wastes from the laboratory proceeds via two distinct routes covering either laboratory-generated hazardous wastes or excess unconsumed samples.

11.6.1. Laboratory Accumulation and Satellite Waste Containers

11.6.1.1. Waste materials from routine lab procedures are collected in containers of appropriate construction, placed in convenient locations at the point of generation. Under RCRA guidelines, these are defined as satellite containers.

11.6.1.2. The amount of hazardous waste stored in the laboratory at the individual satellite areas cannot exceed 55 gallons (liquid) or 550 lbs (solid) per waste stream, for non-acute hazardous waste.

11.6.1.3. Satellite waste containers must be labeled in accordance with OSHA regulations, including:

11.6.1.3.1. Designation of the contents to be hazardous waste with the words "Hazardous Waste" clearly legible

11.6.1.3.2. The waste stream description (e.g., acid waste)

11.6.1.3.3. A reference to area generating the waste (e.g., metals prep)

11.6.1.3.4. A hazard label (e.g., corrosive)

11.6.1.4. The satellite containers must be maintained such that evolution of chemical vapors is precluded. This requires that the container be closed at all times, except when adding or emptying hazardous waste to and from the container.

11.6.1.5. The most critical point in the waste handling system is when a person (e.g., analyst, technician) places a waste material into a satellite container. Here, the characteristics or listing of the waste and the waste stream must both be known to match. For this reason, only

material from approved procedures should be placed in the compatible satellite containers. All materials from experimental procedures, unknown or out of the ordinary sources, or from spill cleanups must be characterized and described to the Hazardous Waste Coordinator, who determines the proper method of disposal.

11.6.1.6. Full satellite containers must be transferred to the proper accumulation drum within 3 calendar days. Lab collection containers must not be filled to the top of the opening. Space must be left to prevent splashing of hazardous material when containers are emptied and to allow for expansion and contraction within the drum during transport.

11.6.1.7. Satellite containers must have secondary containment made of material that could successfully contain the entire satellite container's contents.

11.6.2. Unconsumed Sample Disposal

11.6.2.1. Samples which cannot be returned to the client for disposal must first be characterized in order to be processed for disposal.

11.6.2.2. Sample characterization is initiated at the time of final report generation by the individual signing the report (e.g., project manager). Samples are characterized by one of three methods

11.6.2.2.1. Analytical results are evaluated against characterization criteria established for the sample waste stream. The samples which exhibit waste characteristics as previously outlined are segregated and denoted per laboratory/facility policies. The completed form is then forwarded to the Hazardous Waste Coordinator, who in turn uses the information to coordinate removal of unconsumed samples from active sample storage by the log-in staff. OR:

11.6.2.2.2. Samples are scanned out of EPIC Pro (LIMS) as RCRA nonhazardous to be disposed as the waste stream is normally handled unless the sample tested over RCRA limits, in which EPIC Pro (LIMS) will prompt the employee that the sample is scheduled for Hazardous disposal, and is segregated from the nonhazardous samples. OR:

11.6.2.2.3. Samples of a certain type are all "assumed" to be hazardous, and all are placed into an accumulation drum with all required RCRA labeling for that waste stream.

11.6.2.3. Weekly, a Disposal Report by Sample is generated in EPIC Pro to facilitate the identification of samples designated as hazardous based on sample analysis. A sample custodian will attach a "LAB PACK" label to all samples identified as hazardous. Upon removal from the sample storage cooler, any sample labeled "LAB PACK" will be placed in the hazardous waste disposal area. The "LAB PACK" designated samples will be placed in a labeled drum. All "LAB PACK" designated samples will be disposed of by an approved waste disposal firm.

11.7. Transferring Satellite Waste to the Waste Storage/Accumulation Area

11.7.1. All transfers of satellite waste to waste drums must be made by the Hazardous Waste Coordinator or designated, trained personnel. When a satellite waste container is full, the Hazardous Waste Coordinator, or designee must be notified. Regular disposal events may be scheduled to dispose satellite waste on a continuous basis.

11.7.2. Find the correct waste drum by referring to the Hazardous Waste placard and hazard label. Mixing solvents that are not compatible could result in a hazardous reaction.

11.7.3. Ensure there is enough capacity in the drum to hold all the content that will be dispensed.

11.7.4. Check to make sure there is a ground connection before opening a solvent waste drum.

11.7.5. Open and slowly pour the contents of the satellite container into the proper waste drum using an appropriate solvent resistant funnel.

11.7.6. Replace the cap on the bunghole and carefully screw the cap on but do not tighten the cap.

11.8. Unconsumed Soil Samples

11.8.1. Non-hazardous soil samples will be consolidated in a drum for removal and incineration.

11.8.2. USDA regulated soils will be disposed of as described in section 11.5.5.4.

11.8.3. Hazardous soil samples will be disposed of as described in section 11.6.2.3.

11.9. Elementary Neutralization

11.9.1. Dilute corrosive solutions (e.g. preserved metals samples) which do not exhibit any hazardous characteristics other than being corrosive, may be neutralized. Elementary neutralization is exempt from RCRA permitting requirements for on-site hazardous waste treatment. While exempt under RCRA guidelines, before utilizing this practice to reduce off-site treatment or disposal of wastes, local pretreatment and discharge standards must be met for publicly owned treatment works (POTW).

11.9.2. The discharges listed below are prohibited under the National Pretreatment Standards and Prohibited Discharge Standards:

11.9.2.1. Pollutants causing fire or explosion (waste with a flashpoint < 60°C)

11.9.2.2. Corrosive wastes with pH less than 2 or greater than 12.5

11.9.2.3. Solid or viscous pollutants that could potentially block the system

11.9.2.4. Oxygen-demanding pollutants

11.9.2.5. Wastes which generate toxic gases

11.9.3. Non-hazardous water samples can be neutralized and disposed of via the sewer. A neutralization tank is attached to the sink drains. Fill the sink half-way with tap water. Pour several samples into the sink until it is about ¾ full. Drain and flush with copious amounts of tap water. The neutralization tank must be checked monthly and the pH adjusted to a pH greater than 5. Any empty sample glass containers should be crushed and disposed of by an approved waste disposal firm.

11.10. Waste Storage Container Requirements

11.10.1. Drums in the hazardous waste storage area are labeled consistent with both DOT and EPA regulations concerning hazardous materials and wastes (see Attachment IV for example of label).

11.10.2. Labels must be easily visible and legible (i.e., a drum must not be labeled and then placed in such a way that the label cannot be seen).

11.10.3. The Accumulation Start Date must be recorded on the drum. The date should reflect the first time waste was added to the drum and not the date when the waste was generated in the laboratory.

11.10.3.1. Once a waste is removed from the point of generation to a hazardous waste staging area, the clock is started for storage time prior to disposal.

11.10.3.2. Drums must be picked up by TSDF for disposal before accumulation time exceeds RCRA requirement for lab's generator status (see table 2.3).

11.10.4. One hazard label should be placed on the drum's top and another adjacent to the accumulation label.

11.10.5. The hazardous waste staging room must be arranged in such a fashion to assure direct access pathways in the event of foreseeable emergency. A minimum aisle space of three feet must be maintained at all times. Hazardous waste drums are to be stored in a manner that facilitates easy access both for filling and in case of an emergency. Drums are never stored more than two deep.

11.10.6. All hazardous waste drums and containers must be securely closed when not in use. All volatile and flammable hazardous waste liquid containers must be securely grounded at all times. Drums containing these liquids should also be manipulated with non-sparking tools and fitted with a drum venting bung, to assure that excess pressure build-ups are safely released.

11.10.7. All liquid waste stream containers must be provided with secondary containment devices. Such containment devices must be made of materials compatible with each waste, and they must be free of leaks. The waste storage room may act as secondary containment as long as the room has been constructed to safely and effectively contain a hazardous waste spill.

11.10.7.1. Secondary containers must exceed the total volume of the largest container stored in each containment device for indoor storage.

11.10.8. Compatibility of wastes must be considered in arranging storage areas. For example, acid waste should never be stored adjacent to basic waste, particularly cyanide wastes. Further examples are outlined in 40CFR264, Appendix V.

11.10.9. The hazardous waste staging area is controlled so unauthorized personnel are not able to access the room or contents.

11.10.10. The maximum volume of acutely hazardous waste (e.g., P-listed wastes) that can be accumulated in the laboratory is one quart. The volumetric measurement of one quart is based upon container size in which the waste is stored and not the actual amount (volume) of waste present. An example of how this one quart limit can inadvertently be exceeded involves the disposal of a neat standard of 2,4-dinitrophenol into a one gallon bottle. While the neat standard itself may only constitute 1-2mL, the volume as defined under RCRA would be one gallon, thus the laboratory would be out of compliance.

11.11. Waste Documentation and Reporting

11.11.1. All drums containing hazardous waste are recorded in a logbook or database. The information contained in this log is useful when filling out EPA biennial reports and for retaining an accurate description of how much waste has been accumulated. The following information is entered into the logbook/database:

11.11.1.1. The drum number.

11.11.1.2. The date filling the drum was started.

11.11.1.3. The drum capacity (e.g., 55-gallon, etc.).

11.11.1.4. The manifest number associated with the drum's disposal.

11.11.2. The following hazardous waste records must be maintained a minimum of five years and should be retained indefinitely:

11.11.2.1. Drum tracking logs.

11.11.2.2. Sample Reports.

11.11.2.3. Sample disposal information and waste records on computer disc.

11.11.2.4. Analytical records relating to sample waste stream profiling and characterization.

11.11.2.5. Labpack inventory logs.

11.11.2.6. Biennial Reports, Exception Reports, or other reports filed for compliance reasons.

11.11.2.7. Records related to unresolved enforcement action must be retained indefinitely until such a time that the matter is resolved.

11.11.2.8. Facility Certificates of Destruction or Recycling

11.11.3. A Waste Manifest is the documentation form that must accompany all shipments of hazardous waste while in transit.

11.11.3.1. The manifest is be signed and dated by a DOT trained Pace employee responsible for the shipment and the transporter. The transporter will leave one of these "two-signature page" copies of the manifest.

11.11.3.2. Within 35 days you will receive a three-signature page (generator, transporter, facility) showing the waste reached its intended destination. The waste coordinator is responsible to ensure it is filed in the Waste Manifests folder.

11.11.3.2.1. If you do not receive the three signature page within 35 days of shipment, call the facility to find out why you have not received it. If you do not receive the three-signature page within 60 days you must file an exception report with NC DENR Hazardous Waste Section.

11.11.3.3.. All manifests must be kept for a minimum of three years.

11.11.4. The central accumulation staging room must have a documented inspection weekly and satellite waste containers must have documented inspection as part of the monthly laboratory inspection. The inspections should ensure all regulations are obeyed; see 11.10 and 11.6.1 for accumulation storage and satellite rules, respectively.

11.11.4.1. A record of the inspections must be kept in an inspection log or summary.

11.11.4.2. Records must be maintained for at least three years from the date of inspection. At a minimum, the records must indicate:

11.11.4.2.1. The date and time of the inspection

11.11.4.2.2. The name and signature of the inspector (typically will be Hazardous Waste Coordinator)

11.11.4.2.3. A notation of the observations made (can be in a check-off format, e.g., fire extinguisher: charged _X_ requires recharging __)

11.11.4.2.4. The date and nature of any repairs or other remedial actions.

11.11.5. Annual Generation Reports are required to be filed with Agency that requires Annual Report:

11.11.5.1. Large Quantity Generators must file a biennial report with the local state or EPA Region.

12. Quality Control

12.1. Not applicable to this SOP.

13. Method Performance

13.1. Not applicable to this SOP.

14. Pollution Prevention and Waste Management

14.1 Not applicable to this SOP.

15. References

15.1. 40CFR261-268, Code of Federal Regulations Chapter 1, Subchapter I – Solid Waste.

15.2. 29CFR171-174, Code of Federal Regulations, Transportation.

15.3. Federal Plant Pest Regulations, Part 330.

15.4. Understanding the Hazardous Waste Rules, A Handbook for Small Business, 1996 Update, www.epa.gov/docs.

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I: Hazard Codes for Common F-List Wastes (solvents).

16.2. Attachment II: TCLP Contaminant List with Concentration Limits.

16.3. Attachment III: Soil Movement Regulations (Map).

16.4. Attachment IV: Hazardous Waste Label for Accumulation Drum (example).

16.5. Attachment V: Satellite Container Inspection Form

16.6. Attachment VI: Waste Accumulation Room Inspection Form

17. Revisions

Document Number	Reason for Change	Date
ALL-S-002-rev.0	First Issue	17Mar2005
	General: converted old SOP and EMM into an SOP Template (SOT). Removed MN address from header. Sections 1, 2.1, 3: reworded. Removed old section 2.3. Inserted new Table 2.4- RCRA Requirements for labs. Section 6: added definitions for DTSC and Universal Waste. Moved old Table 2 to Attachment II and changed reference in section 6.19.2.4. Removed old section 7 (Responsibilities). Section 8.1: removed sentence regarding SOP addenda. Section 8.4: reworded drum section to be more general. Added new section 11.1 (from old section 2.3). Added section 11.1.3: number entry is in editable red text. Added section 11.2.1: size of generator is in editable red text. Sections 11.4.1 thru 11.4.4: added these sections in red editable text so labs can enter information about their facility's waste streams. Section 11.5: added reference to Attachment I. Section 11.6.2.3: added in red text so labs can enter their method for sample disposal. Sections 11.7.1 and 11.10.7; reworded for clarity. Section 11.8: added in red text so labs can enter their method of segregating soils for USDA permit.	
SOT-ALL-S-002-rev.01	Section 11.9.3: added in red text so labs can enter their neutralization procedures. Added sections 11.11.2.6 – 11.11.2.8. Section 11.11.3: added red text so labs can enter procedure for maintaining waste documentation. Removed old section 11.11.5 (repeat information). Added new label in Attachment IV. Added new Attachments V and VI.	14Oct2009
SOT-ALL-S-002-rev.02	Removed old section 8.11- Over Pack Drums. Section 15.4: Added DoD reference.	04May2011
S-CHR-S-002-rev.02	Updated red text with local procedures	23July2011

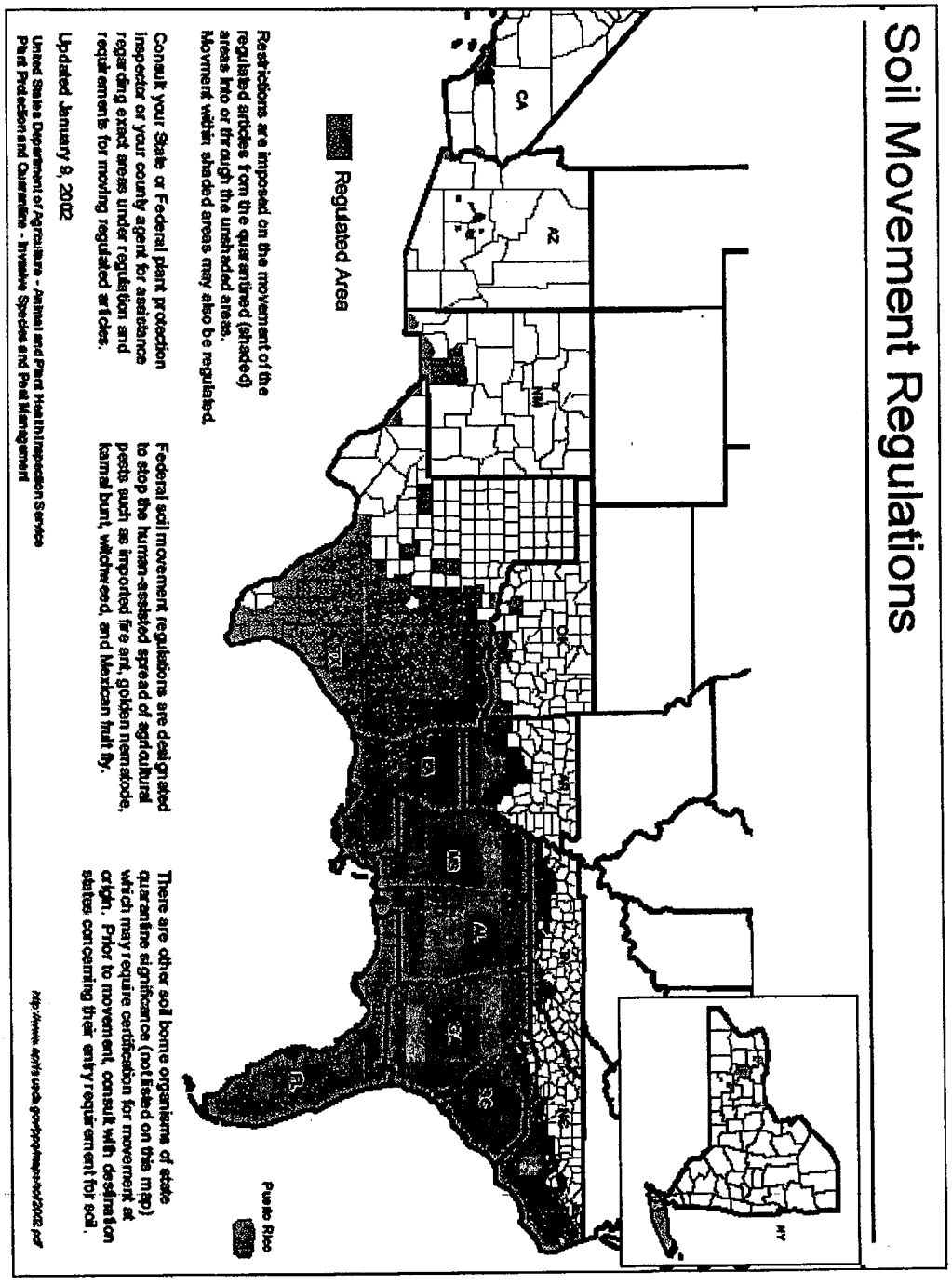
Attachment I: Common F-Listed Solvents

Waste Name	Hazardous Waste Code(s)	Waste Name	Hazardous Waste Code(s)
Acetone	F003	Methylene Chloride	F001, F002
Benzene	F005	Methyl ethyl ketone (MEK)	F005
iso-Butanol	F005	Methyl isobutyl ketone	F003
n-Butyl alcohol	F003	Nitrobenzene	F004
Carbon Disulfide	F005	2-Nitropropane	F005
Carbon Tetrachloride	F001	Orthodichlorobenzene	F002
Chlorobenzene	F002	Pyridine	F005
Chlorinated fluorocarbons (CFC)s	F001	Tetrachloroethylene	F001, F002
Cresols	F004	Toluene	F005
Cresylic acid	F004	1,1,1-Trichloroethane	F001, F002
Cyclohexanone	F003	1,1,2-Trichloeoethane	F002
2-Ethoxyethanol	F005	1,1,2-Trichloro-1,2,2-trifluoroethane	F002
Ethyl acetate	F003	Trichloroethylene	F001, F002
Ethyl benzene	F003	Trichloroflourormethane	F002
Ethyl ether	F003	Xylene	F003
Methanol	F003		

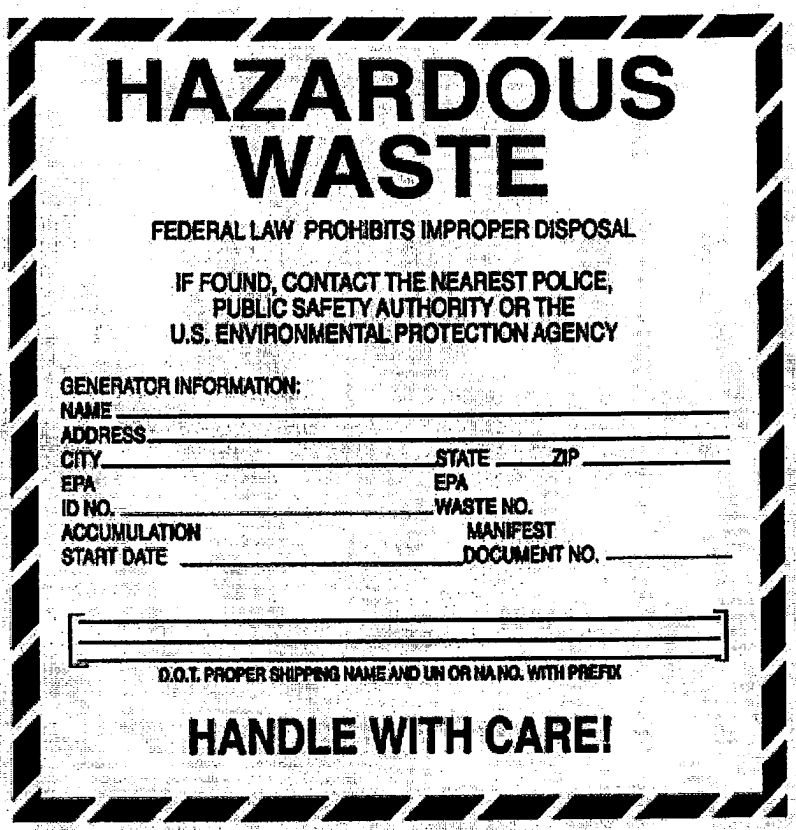
Attachment II: TCLP Contaminant List

Waste ID #	Contaminant	Conc (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP Silvex	1.0
D018	Benzene	0.5
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D031	Heptachlor	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D039	Tetrachloroethylene	0.7
D040	Trichlorethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D043	Vinyl Chloride	0.2

Attachment III: USDA Soil Movement Regulation Map



Attachment IV: Hazardous Waste Label for Accumulation Drum (Example)



Attachment V: Satellite Container Inspection Form

Waste Container ID	Properly Labeled	Label Legible	Secondary Containment	Closed when not in use	Inspection Date
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
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	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	

If any of the above fields are a "NO", please document how the deviance was brought back into compliance.

Comments: _____

_____

_____

Signature of Inspector: _____

Reviewed by: _____

Review Date: _____

ATTACHMENT VI: WASTE ACCUMULATION ROOM INSPECTION FORM

Containers closed when not in use	Labels Easily Seen and Legible	Drums have Accumulation Start Date	Storage Amounts and Limits Obeyed[1]	Secondary Containment	Adequate Aisle Space	Available Emergency Equip. and Materials	Signature and Date of Inspection	Corrective Action for NO Answers
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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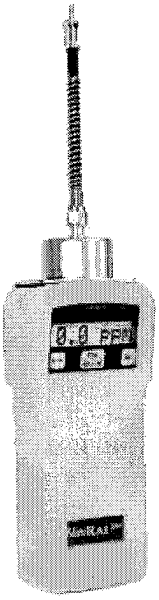
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		

1: Accumulation limits are 90 days for LQG, and 180 days for SQG. SQG may have no more than 6000kg waste at any time.

MiniRAE 2000

Portable VOC Monitor
PGM-7600



OPERATION AND MAINTENANCE MANUAL

(Document No.: 011-4001-000)
Revision E, May 2005

RAE SYSTEMS

ISO 9001 CERTIFIED

4.4 Calibrate and Select Gas

WARNINGS

The calibration of all newly purchased RAE Systems instruments should be tested by exposing the sensor(s) to known concentration calibration gas before the instrument is put into service for the first time.

For maximum safety, the accuracy of the MiniRAE 2000 should be checked by exposing it to known concentration calibration gas before each day's use.

In the first menu of the programming mode, the user can perform functions such as calibration of the MiniRAE 2000 Monitor, select default cal memories, and modify cal memories (see Table 4.4).

Table 4.4

Calibrate/Select Gas Sub-Menu
Fresh Air Cal?
Span Cal?
Select Cal Memory?
Change Span Value?
Modify Cal Memory?
Change Correction Factor?

Calibrating the MiniRAE 2000 monitor is a two-point process using "fresh air " and the standard reference gas (also known as span gas). First a "Fresh air" calibration, which contains no detectable VOC (0.0 ppm), is used to set the zero point for the sensor. Then a standard reference gas that contains a known concentration of a given gas is used to set the second point of reference.

Note: The span value must be set prior to calibrating for fresh air or span.

The user can store calibrations for up to 8 different measurement gases. The default gas selections are as follows:

Cal Memory #0.....Isobutylene

Cal Memory #1.....Hexane

Cal Memory #2.....Xylene

Cal Memory #3.....Benzene

Cal Memory #4.....Styrene

Cal Memory #5.....Toluene

Cal Memory #6.....Vinyl Chloride

Cal Memory #7.....Custom?

Memory #0 functions differently than the other 7 memories. For Memory #0, isobutylene is always the calibration gas. When the gas is changed in Memory #0 to one of 100 other preprogrammed chemicals or to a user-defined custom gas, a correction factor is applied to all the readings. During calibration, the unit requests isobutylene gas and displays the isobutylene concentration immediately following calibration, but when the unit is returned to the normal reading mode, it displays the selected gas and applies the correction factor.

The other 7 cal memories require the same calibration gas as the measurement gas. These memories may also be modified to a preprogrammed chemical or to a user-defined custom gas. In the gas library, only the gases that can be detected by the installed UV lamp will actually be displayed. Note that although the correction factor for the new gas will be displayed and can be modified, this factor is not applied when Memories #1-7 are

used. Therefore the factor will not affect the readings in these memories.

Once each of the memories has been calibrated, the user can switch between the calibrated gases by changing the cal memory without the need to recalibrate. Or the user can switch the measurement gas in Memory #0 and the appropriate correction factor will automatically be applied without the need to recalibrate. If the gas is changed in Memories #1-7, it is necessary to recalibrate.

To change a default gas from the list above to a library or custom gas, first go to Select Cal Memory (Section 4.4.3) and then proceed to Modify Cal Memory (Section 4.4.5) to enter the desired gas. If the desired compound does not appear in the preprogrammed library, the user can use the Custom_VOC entry in the library, or the name and correction factor of any of the existing compounds can be changed as described in Section 4.4.5. A list of some 300 correction factors is given in Technical Note 106, available at the website www.raesystems.com.

4.4.1 Fresh Air Calibration

This procedure determines the zero point of the sensor calibration curve. To perform a fresh air calibration, use the calibration adapter to connect the MiniRAE 2000 to a "fresh" air source such as from a cylinder or Tedlar bag (option accessory). The "fresh" air is clean dry air without any organic impurities. If such an air cylinder is not available, any clean ambient air without detectable contaminant or a charcoal filter can be used.

1. The first sub-menu shows: "Fresh air Cal?"
2. Make sure that the MiniRAE 2000 is connected to one of the "fresh" air sources described above.
3. Press the **[Y/+]** key, the display shows "zero in progress" followed by "wait.." and a countdown timer.

After about 15 seconds pause, the display will show the message "update data...zeroed... reading = X.X ppm..." Press any key or wait about 20 seconds, the monitor will return back to "Fresh air Calibration?" submenu.

4.4.2 Span Calibration

This procedure determines the second point of the sensor calibration curve for the sensor. A cylinder of standard reference gas (span gas) fitted with a 500 cc/min. flow-limiting regulator or a flow-matching regulator is the simplest way to perform this procedure. Choose the 500 cc/min. regulator only if the flow rate matches or slightly exceeds the flow rate of the instrument pump. Alternatively, the span gas can first be filled into a Tedlar Bag, or delivered through a demand-flow regulator. Connect the calibration adapter to the inlet port of the MiniRAE 2000 Monitor, and connect the tubing to the regulator or Tedlar bag.

Another alternative is to use a regulator with >500 cc/min flow but allow the excess flow to escape through a T or an open tube. In the latter method, the span gas flows out through an open tube slightly wider than the probe, and the probe is inserted into the calibration tube.

Before executing a span calibration, make sure the span value has been set correctly (see next sub-menu).

1. Make sure the monitor is connected to one of the span gas sources described above.
2. Press the **[Y/+]** key at the "Span Cal?" to start the calibration. The display shows the gas name and the span value of the corresponding gas.
3. The display shows "Apply gas now!" Turn on the valve of the span gas supply.

4. Display shows "wait.... 30" with a count down timer showing the number of remaining seconds while the monitor performs the calibration.
5. To abort the calibration, press any key during the count down. The display shows "Aborted!" and return to "Span Cal?" sub-menu.
6. When the count down timer reaches 0, the display shows the calibrated value.

   Note: The reading should be very close to the span gas value.
7. During calibration, the monitor waits for an increased signal before starting the countdown timer. If a minimal response is not obtained after 35 seconds, the monitor displays "No Gas!" Check the span gas valve is on and for lamp or sensor failure before trying again.
8. The calibration can be started manually by pressing any key while the "Apply gas now!" is displayed.
9. After a span calibration is completed, the display will show the message "Update Data Span Cal Done! Turn Off Gas."
10. Turn off the flow of gas. Disconnect the calibration adapter or Tedlar bag from the MiniRAE 2000 Monitor.
11. Press any key and it returns back to "Span Gas Cal?"

7. TROUBLESHOOTING

To aid the user in diagnosing the monitor, a special diagnostic mode can be used displays critical, low level parameters. Section 7.1 describes the operation of the diagnostic mode. Section 7.2 summarizes the frequently encountered problems and suggested solutions. By turning on the MiniRAE 2000 monitor in diagnostic mode and by using the troubleshooting table in Section 7.2, the user can usually correct the problem without having to return the monitor for repair.

WARNING

This function should be used by qualified personnel only! The diagnostic mode allows the user to set several low-level parameters that are very critical to the operation of the monitor. Extra care should be taken when setting these parameters. If the user is not familiar with the function of these parameters and sets them incorrectly, it may cause the monitor to shut down or malfunction.

7.1 Troubleshooting Table

Problem	Possible Reasons & Solutions
Cannot turn on power after charging the battery	**Reasons:** Discharged battery. Defective battery. Microcomputer hang-up. **Solutions:** Charge or replace battery. Disconnect, then connect battery to reset computer.
No LCD back light	**Reasons:** Trigger level too low, the current mode is not user mode, and the mode does not support automatic turn on back light. **Solutions:** Adjust trigger level. Verify the back light can be turned on in user mode. Call authorized service center.
Lost password	**Solutions:** Call Technical Support at +1.408 .752 .0723 or +1. 888 .723 .4800
Reading abnormally High	**Reasons:** Dirty sensor module. Dirty water trap filter. Excessive moisture and water condensation. **Solutions:** Clean sensor module and lamp housing. Replace water trap filter. Blow dry the sensor module.
Buzzer Inoperative	**Reasons:** Bad buzzer. **Solutions:** Call authorized service center.

Inlet flow too low	**Reasons:**	Pump diaphragm damaged or has debris. Flow path leaks.
	Solutions:	Check flow path for leaks; sensor module O-ring, tube connectors, Teflon tube compression fitting. Replace pump or diaphragm.
"Lamp" message during operation	**Reasons:**	Lamp drive circuit. Weak or defective PID lamp, defective.
	Solutions:	Turn the unit off and back on Replace UV lamp
Full scale measurement in humid environment	**Reasons:**	Dirty or wet sensor.
	Solutions:	Clean and dry sensor and lamp housing. Adjust sensor fingers to ensure not touching Teflon. Use water trap filter.
Reading abnormally low	**Reasons:**	Incorrect calibration. Low sensitivity to the specific gas. Weak or dirty lamp. Air leakage.
	Solutions:	Calibrate the monitor. Replace sensor. Clean or replace lamp. Check air leakage.

Contact Heron Instruments Inc.

T 1-800-331-2032
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Warranty

Heron Instruments Inc warrants to repair or replace any such defective equipment or part (determined to our satisfaction to have a defect in workmanship or original material) upon receipt and inspection of such defective equipment to Heron Instruments Inc. with all shipping pre paid by the user.

In no event shall Heron be liable for any direct, indirect or consequential damages, abuse, acts of third parties (rental equipment) environmental conditions or other expenses which may arise in connection with such defective equipment.
This warranty shall not apply to damage of equipment caused by incorrect installation, usage, storage alteration or inadequate care.

Heron Warranty coverage does not extend to the following:

- Tape, bag or batteries used with the product.
- Products used as rental equipment.
- Products contaminated by materials which are hazardous and as such have rendered the unit unserviceable as outlined in the maintenance guide and warranty manual.
- Parts failure due to neglect in cleaning or servicing.
- Failure of parts caused by misuse or inappropriate use.

All probe tips (excluding dipper-T 5/8 probe tip) warranted for 1 year.

When returning a product under warranty, please review service options available or advise Heron Instruments in advance,
by telephone at 1-800-331-2032 or 905-634-4449;
by fax at 905-634-9657 or
by e-mail at info@heroninstruments.com

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Operating/Maintenance
Instructions & Warranty for

dipper-T, little dipper,
SKINNY DIPPER, WATER TAPE
& potable water meter
Water Level Meters

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General

Avoid sharp edged casing

Avoid entanglement with other equipment in boreholes and wells.

Do not use to plumb borehole depths

Do not use as guide to backfilling with sand etc. Instrument may get locked in sand.

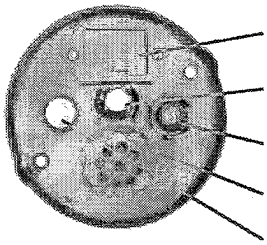
Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

Maintenance continued inside

Water Level Meter Instructions

dipper-T, little dipper, potable water meter, SKINNY DIPPER



Battery Box

Sensitivity Knob for Cascading Water

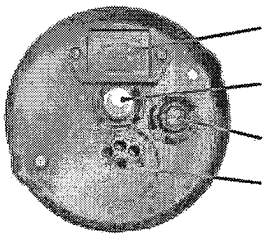
Signal LED

Signal Buzzer

Test Button Only

IMPORTANT
This is not an ON/OFF switch

WATER TAPE



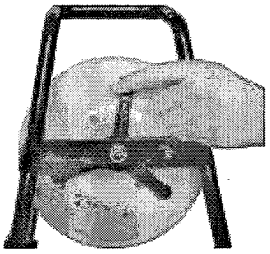
Battery Box

ON/TEST Button

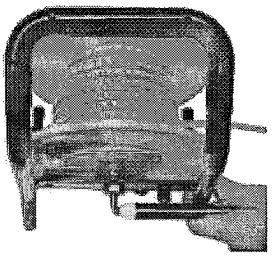
Signal LED

Signal Buzzer

NOTE: WATER TAPE does not have a sensitivity control.



Reel Lock
To unlock the reel turn the plastic lock handle in the direction shown until it touches the frame.



To Test Entire System
Hold the centre pin on the probe against the stud on the back of the axle at the same time touch the probe body against the screw on the frame. The buzzer will sound if the system is ok. **Make sure unit is on.**

Equipment Check

1 Test circuit and battery by pressing the **white** button. Make sure the panel securing knobs are tight. If the unit does not sound, replace the battery (one 9 volt) in the drawer on the faceplate and repeat.

2 Test tape and probe by shorting out the centre conductor and probe body on the stud on the back axle of the unit as shown. The buzzer and light should activate; if not, adjust the sensitivity and repeat. **Make sure unit is on.**

3 Test the unit in tap water before going out to the field. **DO NOT** use distilled or deionized water.

Use in the Field - Important*

1 Reel the tape down the well carefully, avoiding the edge of the casing. Hang the unit on the casing where possible and run the tape over the tape guide on the frame leg to avoid cuts and nicks.

2 When the unit sounds, carefully measure the depth to water from your reference point by slowly lowering and raising the probe to the air/water interface. Raise the probe, shake off the water and repeat the measurement. In wells with cascading water, reduce the sensitivity by turning the Sensitivity Knob anti-clockwise.

3 The dipper-T, little dipper and WATER TAPE probes are rated to full depth and can be used to measure depth to bottom of well. Reel the tape until the probe touches bottom and the tape becomes slack. **DO NOT** let the probe fall under gravity or it will be damaged when it hits the bottom of the well. **DO NOT** use the unit to measure sand backfill as the tape and probe may get "locked" in the backfill.

4 Wind the tape back onto the reel, removing any excess moisture and dirt.

Cleaning the Meters

1 Always the clean the meters after use in the field to maintain optimal performance and extend the life of the unit.

2 Unwind the tape and probe and wash with a mild detergent. Rinse well, wipe and rewind onto the reel. The tape and probe can be cleaned and degreased with the following: soap solution, naptha alcanox 10%, Joy detergent 10%, Lestoil; methyl, isopropyl and isobutyl alcohols; hexane, heptane and fully halogenated freon. Rinse thoroughly with water afterwards.

3 Wash reel if necessary. The central electronic panel can be removed and the reel washed down. Unthread the panel securing knobs and carefully pull out the central panel. Disconnect the panel from the tape. The reel may be cleaned with the following: soap solution, naptha alcanox 10%, Fantastic, Windex, Joy, Top Job, Mr. Clean, Formula 409; hexane, heptane, white kerosene, mineral spirits; methyl, isopropyl, isobutyl and 1 + 3 denatured alcohols; freons TF + TE. Rinse well with water and let dry before putting the panel back in. DO NOT use abrasives, partially halogenated hydrocarbons or ketones to clean the reel.

Trouble Shooting

No Sound when the unit is tested

1 Check battery by pressing the **white** button. Replace battery if low and make sure panel securing knobs are tight. If unit still does not sound, remove central panel and check all connections.

2 Check probe conductor to make sure it is clean and not crusted with mineral deposits. Check tape/probe connection for any breaks.

Continuous Sound when the unit is turned on or probe removed from water.

1 Make sure probe conductor tip is clean.

2 Check for excess moisture on the back of the electronic panel.

3 Check probe/tape connection and tape for any breaks or leaks where water might get in.

General

- Avoid sharp edged casing
- Avoid entanglement with other equipment in boreholes and wells.
- Do not use as guide to backfilling with sand etc., Instrument may get locked in sand.
- Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

*Important: Ensure that the Panel Securing Nuts are tight before use.

MULTI-PROBE

W-20XD Series

W-22XD.23XD

Operation Manual

HORIBA

3.2.2 AUTO calibration method

To obtain correct measurement, it is necessary to calibrate the sensor using the standard solution before performing measurement. Previous calibration records shown in calibration data. See page 47 "Calling up The calibration data"

Note

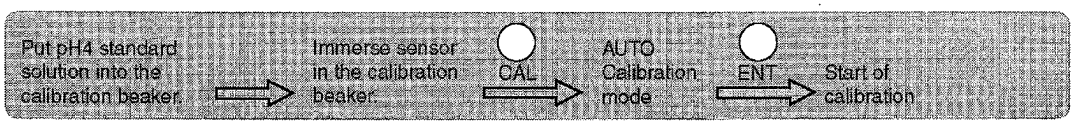
- In the AUTO calibration mode, the pH and COND sensors are calibrated with pH4 standard solution, and the DO and DEP sensors in the atmosphere simultaneously.
  Calibration contents at 25 °C are as follows:
  pH: Calibrate at 4.01 (zero calibration) and the Span is the adjustment value at the factory.
  COND: 0.449 S/m (Span calibration), the Zero is the adjustment value at the factory.
  TURB: 0 NTU (zero calibration), the Span is the adjustment value at the factory.
  DO: 8.52 mg/L (Span calibration), the Zero is the adjustment value at the factory.
  DEP: 0 m (Zero calibration), the Span is the adjustment value at the factory.

Auto-Cal Explanations

When "Auto-Cal" function is used with no calibration record, it will make one point calibration with the value seen below. We recommend to use this function, when no calibration record exists or the calibration is lost, and you're in need for quick & fast calibration
When "Auto-Cal" function is used after manual two-point calibration, please be reminded of the description below. We recommend not to use "Auto-Cal" function when manual two-point calibration is performed already.

	Auto Cal Value	What happens when "Auto Cal" is performed after manual two point calibration	Recommendation
pH	4.01 pH	When "Auto Cal" is performed after two point manual calibration (manual zero calibration and span calibration): 1) The manual zero calibration value will be over written. 2) The slope of the calibration curve calculated by manual calibration will remain unchanged.	
Conductivity	0.449 S/m	"Auto Cal" will over write the mid-range span value (0.090~0.999 S/m) with 0.449 S/m. The span value of the lowest / highest ranges will also be automatically calculated and over-written by mid-range span value. The manual zero calibration value will remain unchanged.	In order to obtain a high accuracy in calibration, we recommend using the standard solution for each range.
Turbidity	0 NTU	The manual zero calibration value will be over-written by "Auto Cal". The manual span calibration value will remain unchanged.	For both manual and "Auto-Cal", make sure the container for the standards is clean and have no contamination. When the standard is contaminated, it will affect the lower turbidity value.
DO	8.52 mg/L	The manual span calibration value will be over-written by "Auto Cal". The manual zero calibration value will remain unchanged.	
Depth	0 m	The 0m amount will be replaced by "Auto Cal".	

- Values may be unstable if there is temperature fluctuation. Calibrate after waiting for about an hour.

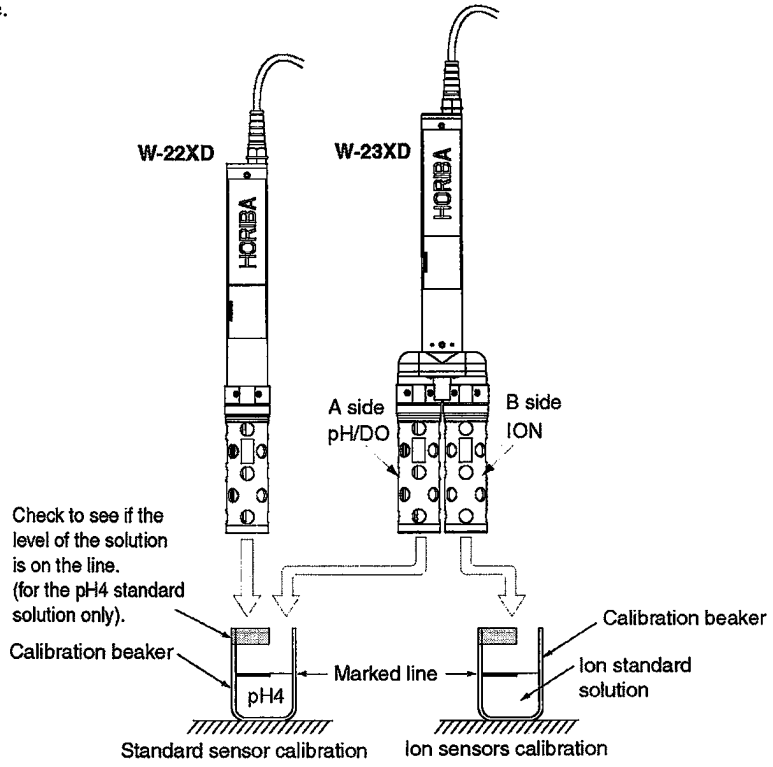


Calibrate with the following procedure.

1. **Wash the sensor with distilled water a few times and put the pH4 standard solution into the calibration beaker to the marked line. Then immerse the sensor in it.**
For the W-23XD model, immerse the sensor A side.

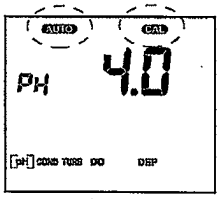
Important

- According to the label indication on the calibration beaker, check to see if the level of the calibration solution is on the label line.



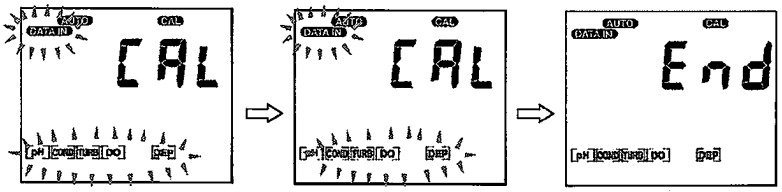
2. Press the **CAL** key, when one of pH, COND, TURB, DO or DEP is selected.

AUTO and CAL appear and the control unit enters the AUTO Calibration mode.



3. Press the **ENT** key to start AUTO Calibration.

Upon completion of all of the pH, COND, TURB, DO, and DEP, End will be displayed.
During calibration, DATA IN and [ ] for the selected measurement parameter blink. [ ] light up for the parameter of which calibration is finished.



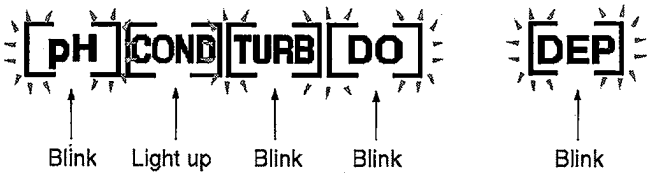
End of calibration

When DATA IN is blinking

To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

Example: When COND calibration is finished:

[ ] for [COND] stops blinking is lit



Note

- For any parameter in which the calibration error has happend, calibration can not be performed, and [ ] indication keeps blinking. If two or more errors happen, an error with a smaller error number appears. (See pages 98 to 100 for these errors and troubleshooting.)
  These calibration errors disappear when the sensor is calibrated properly again, or when the control unit is turned ON again.
- Calibration is performed simulitaneous and independently for all these parameters until each reading becomes stable, but the maximam duration allowed is three minutes. If the reading can not become stable within three minutes, the calibration terminates and calibration error is given to the correspondent parametre(s).

4. Press the **MEAS** key to return to the Measurement mode.

Important

- Neutralize pH 4 standard solution before disposal.

AUTO calibration of the ion sensors (W-23XD model only)

AUTO calibration is possible only for the combination of Cl^-, NO_3^-, Ca^{2+}.
For other ion sensors, the manual calibration is required after setting ion valence described on page 82.
Span calibration value preset for auto calibration corresponds to the concentration of standard solution provided as an accessory or 10 times diluted value of the standard solution.

Important

- Ion sensors take time to give stable indications. Therefore, immerse the ion sensors in standard solution for approximately one hour prior to the calibration. Then calibrate the ion sensors and perfom measurements.

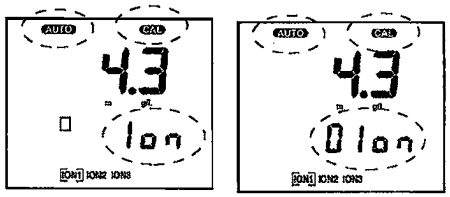
1. Wash the sensor with distilled water a few times. Put the supplied ion standard solution (#130) into the calibration beaker to the marked line. Then immerse the B side of the sensor in it.

2. Enter ion measurement mode at one of ion 1, ion 2 or ion 3.

3. Press the **CAL** key.

AUTO, CAL, and "Ion" appear. The control unit then enters the AUTO Calibration mode.

4. Press the **SET** key.

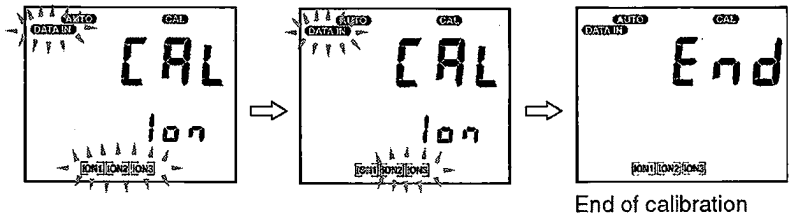


When "Ion" is diplayed:
When 35.5 mg/L, 31.0 mg/L, or 20.1 mg/L is displayed, use these values for span calibration 1 "For Chloride, Nitrate and Calcium ion sensors".

When "0 Ion" is displayed:
When 3.55 mg/L, 3.10 mg/L, or 2.01 mg/L is displayed, use these values for dencity by 1/10 of span calibration 2 "For Chloride, Nitrate and Calcium ion sensors".

5. Press the **ENT** key to start AUTO calibration.

Upon completion of the AUTO calibration of all the ion sensors ION1, ION2, and ION3, End will be displayed.



End of calibration

When DATA IN is blinking
To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

6. Press the **MEAS** key to return to the Measurement mode.

7.2 Troubleshooting

The instrument has a simple error message that informs users of operational errors and failure. Err No. is displayed at the bottom of the screen.

● Error message list

Err No.	Designation	Err No.	Designation
1	Sensor memory failure	6	Span calibration error
2	Sensor battery voltage drop	7	Calibration stability error
3	Instrument battery voltage drop	8	Printer error
4	Communications error	9	DATA IN error
5	Zero calibration error		

● Error and remedy

Important

- For err Nos. 5 to 7, the calibration err display disappears when a proper calibration is performed after the following action, or when the instrument is turned on again. For the other err Nos., the err display disappears after any of the following actions is taken.
- Error Nos. 2 and 3 are displayed even when using the AC adapter if the sensor probe battery voltage or instrument battery voltage drops is low on voltage.

Err NO.	Problem	Cause	Remedy
1	No data can be read from or written into the sensor probe memory.	Internal IC failure	Call your nearest store for sensor probe repair.
2	Sensor probe battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the sensor probe battery. ② Set the batteries (LR03) in the correct direction.
3	Instrument battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the instrument battery. ② Set the battery (6LR61) in the correct direction.
4	No communications possible between the instrument and the sensor probe	① Improper connection of the connector to the instrument ② Cable disconnection	① Connect the connector to the instrument properly and turn on the instrument again. ② Call your nearest store for cable repair.
5	No zero calibration possible	pH • The standard solution is contaminated. • Contamination on the pH glass membrane • Change in concentration of the internal solution for the reference electrode • Cracks in the pH glass electrode COND • The standard solution is contaminated. • The sensor is dirty. • The COND sensor is broken.	pH • Change the standard solution. • Clean the pH glass membrane. • Replace the internal solution for the reference electrode. • Replace the sensor. COND • Change the standard solution. • Clean the sensor. • Contact your nearest store.

Err NO.	Problem	Cause	Remedy
5	Zero calibration not possible	TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		DO	DO
		• Damage to the diaphragm of the DO sensor	• Check the sensor and replace it if damaged.
		DEP	IDEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
6	Span calibration not possible	pH	pH
		• Contamination on the pH glass membrane	• Clean the pH glass membrane.
		• Change in concentration of the internal solution for the reference electrode	• Replace the internal solution for the reference electrode.
		• Cracks in the pH glass electrode	• Replace the sensor.
		COND	COND
		• The standard solution isn't correct.	• Calibrate with correct standard solution.
		• The standard solution value is set uncorrectly.	• Delete the calibration data for the conductivity, then calibrate the sensor again. (☞ Page 51)
		• The COND sensor is broken.	• Contact your nearest store.
		TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		• The lid is attached uncorrectly.	• Confirm if the lid is attached correctly, then calibrate the sensor again. (☞ Page 30)
		DO	DO
		• Damage to DO sensor diaphragm	• Check the DO sensor and replace it if damaged.
		• DO sensor is unstable.	• Connect DO sensor to the sensor probe. Calibrate the sensor again 1 day later.
		DEP	DEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
		TEMP	
		• Damage to the TEMP sensor	• Contact your nearest store.
7	The calibration value does not become stable within approximately three minutes.	① Sensor contamination	① Clean each sensor.
		② Dry sensor surface	② Pour the standard solution into the calibration beaker. Calibrate the sensor again 1 to 2 hours later.
		③ Severe temperature change	③ Calibrate the sensor in a place at a stable temperature or in a thermostatic oven.

Err NO.	Problem	Cause	Remedy
8	Printer unit failure		Turn OFF the instrument and use the remedy described below. Then turn ON the printer again.
		① Paper has jammed in the printer	① Remove the jammed sheet of paper
		② Improper printer unit connection	② Check to see if the printer is properly connected to the instrument.
		③ Printer failure	③ Replace the printer. * Contact your nearest store if the instrument does not recover after replacement of the printer.
9	Data cannot be stored because the memory is full.	No free space in the memory	Delete the data stored in the memory. (☞ Page 81)

● Other troubles

Remedies for various trouble with no Err No. displayed are described below.

Problem	Cause	Remedy
No data display with the power on	• No batteries	• Set new batteries.
	• Improper position of the positive and negative poles	• Set the batteries properly while paying attention to the positive and negative poles.
	• Battery voltage drop	• Replace the batteries with new ones.
	• Improper instrument battery contact	• Use radio pliers to narrow the positive terminal of the battery snap.
No setting change possible	• Automatic data storage is under way	• Press the CAL key to stop the automatic data storage.
No key operation possible	• The key lock function is working	• Turn OFF the instrument. Then turn ON the instrument again. (☞ Page 76)
	• Failure to calibrate the sensor or wrong calibration.	• Calibrate the sensor properly.
Blinking measured value	• Improper measurement sample	• Use a sample that is in the measurement range.
	• Sensor contamination	• Clean each sensor.
	• Poor calibration is possible. (The standard solution is contaminated.)	• Carry out correct calibration.
tYPE Err The Err is displayed and the operation cannot be performed.	• Improper connection of the cable connector to the instrument	• Connect the connector to the instrument properly and turn on the instrument again.
	• Cable disconnection	• Contact your nearest store.
	• Instrument inside failure	• Contact your nearest store.

● Troubleshooting for the TURB sensor

If an abnormal value such as -10, 800 or more is indicated, or indication does not become stable, follow as below instructions.

Remove the contamination of the sensor

Remove the cover of the turbidity (TURB) sensor, and clean the sensor with cotton swab.
Contamination or bubbles on the sensor may cause fluctuation of TURB values.

Remove bubbles around the sensor

When immersing sensor in the calibration cup, be sure lower it slowly. Quick immersion may cause bubbles on the sensor, which can have bad influence on calibration accuracy to give abnormal value indication.

Use of new standard solution

When calibration, clean the sensor before immersing it in the new standard solution. In case of zero calibration, when the standard solution is turbid or contaminated, calibrate again with the new standard one.

Points to be noted in making measurement

Immerse the sensor slowly in the sample. In case of abnormal measurement value observed, contamination or bubbles adhering may be suspected. So, shake greatly the sensor. Since immersion of the sensor in the sludge layer at the bottom of the sample can prohibit accurate measurement, shake greatly enough to remove the sludge.

● Maintenance of DO sensor

Durable life of DO sensor is generally one year, however, it may vary depending on the using condition. In case of the failure of calibration or breakage of the diaphragm, take either of the following steps according to the using period.

Within one year after purchasing :

Obtain diaphragm replacement kit (optional) to replace the used diaphragm and replenish the internal solution for restoration.

When exceeding one year after purchasing :

Replace by the new DO sensor.

Instructions for completing Chain of Custody (COC)

1. **Section A and B:** Complete all Client information at top of sheet: company name, address, phone, fax, contact (the person to contact if there are questions, and who will receive the final report.), e-mail address (if available), PO#, Project Name and/or Project Number as you would like to see it appear on the report.

2. **Section C:** Invoice Information: Billing information is included in this section. This information should include the name and address of the person receiving the invoice.

3. Quote Reference should be completed if a quotation was provided by Pace Analytical. The Project Manager, and Profile No. will be completed by Pace Analytical Services.

4. **Site Location:** A separate COC must be filled out for each day of sample collection. Record the two letter postal code for the US state in which the samples were collected.

5. **Regulatory Agency:** List the program that is guiding the work to ensure proper regulations are followed.

6. **Section D:** Complete a Sample Description in the "SAMPLE ID' section as you would like it to appear on the laboratory report. The following information should also be included: the sample matrix, sample type (G (grab) or C (composite). When collecting a composite, the start time and end time should be documented in the respective boxes. The collection time for a grab (G) sample should be entered in the boxes marked 'Composite End/Grab'), Sample temp at collection (if required by state), the total number of containers, and preservative used.

7. Mark if the sample was filtered in the field by marking Y or N in 'Filtered' row by the Analysis requested.

8. Requested Analysis: List the required analysis and methods on the lines provided and place a check in the column for the samples requiring the analysis. Additional comments should be referenced in the bottom left hand corner or include attachments for extended lists of parameters.

9. The sampler should print their name in the space provided and sign their name followed by the date of the sampling event at the bottom of the COC in the spaces designated for 'SAMPLER NAME AND SIGNATURE'.

10. When relinquishing custody of the samples to a representative of the laboratory or other organization, indicate the Item Numbers of those samples being transferred; sign relinquished by, date and time, and include your affiliation.

***Important Note:**

Standard Turnaround Time is 2 Weeks/10 business days. Results will be delivered by end of business on the date due unless other arrangements have been made with your project manager.

Special Project Requirements such as Low Level Detection Limits or level of QC reported must be included on the chain of custody in the Additional Comments section.

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1162922

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test											Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																																
2																																
3	Example																															
4																																
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

SHIELD ENGINEERING, INC.

CHAIN OF CUSTODY

Shield Engineering, Inc. Laboratory
4301 Taggart Creek Road
Charlotte, NC 28208

800.395.5220
www.shieldengineering.com

Company:	Report To:		Shipped Via
Billing Address:	Phone:	Fax:	○ UPS ○ Fed X ○ US Postal ○ Hand ○ Other:
	Email:		

Project Name:							ANALYSIS									
Project No:		Composite	Grab	# Containers	LRF:											
P.O. No:																
Circle Matrix: Soil Water CCB Stone Other					Collection											
SAMPLE ID	**SAMPLE LOCATION**				Date	Time										Remarks/Lab ID

Relinquished by:(Signature)	Date:	Time:	Received by:(Signature)	Date:	Time:
Relinquished by:(Signature)	Date:	Time:	Received by:(Signature)	Date:	Time:
Relinquished by:(Signature)	Date:	Time:	Received at Lab:(Signature)	Date:	Time:
Special Instructions:					

Note: Results will be mailed only to the billing address unless otherwise requested.
SF-0002 (Rev. 00, 3/04)

Name of Sampler:_____
Signature_____

TIER II ASSESSMENT PLAN

SOUTH CAROLINA
Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site ID # 02567 **County** Colleton **Facility Name** Rhodesway North

Facility Address 1400 Jefferies Highway, Walterboro, SC

Responsible party Mr. Robert Smith **Address** PO Box 1545, Walterboro, SC 29488-1545

No. USTs 5 **removed?** _____ (date) **replaced?** _____ (date)

Current use of facility/property Convenience store w/ petroleum retail

Current property owner name Rhodes Oil Company

Current property owner address PO Box 1545, Walterboro, SC 29488-1545

Field Screening Methodology

Specify the field screening methodology to be used. The use of field screening methods to optimize the number and location of permanent wells is required.

Twenty one (21) shallow field screening points will be installed at the source area and in a radial pattern outward from the UST basin down gradient of 02567-MW-3 (from the north toward the east directions (see attached **FS Map**) at depths of approximately 10ft bgs.

Three (3) vertical screening points are proposed (one at source area, one approximately 500ft northeast, and approximately 750 ft north east) in the groundwater flow direction.

Three (3) ground water samples will be collected at a depth of two consecutive samples of low to not detected screening levels or advancement refusal. Vertical screening points will not breach a confining layer if encountered.

Twenty one (21) groundwater samples will be collected from approximately 5 feet into the water table to assist with horizontal delineation.

Groundwater samples will be submitted for EPA Method 8260 analyses (to include BTEX, MTBE, naphthalene, and 1,2-DCA), EDB, and total lead analyses from each of the 21 field screening points.

Permanent Monitoring wells **(Estimate number and total completed depth)**

# of shallow wells 6 **total depth** 10 ft each

# of deep wells 3 **total depth** 40 ft each **(if necessary)**

Comments, if warranted The well locations are proposed locations on the Tier II Plan. The laboratory data for groundwater samples collected during the field screening will assist with optimizing the number of wells and their location.

Analyses

List the analytical parameters (e.g., BTEX, MTBE) and estimated number.

SOIL: 7 SBs during field screening & 1 Duplicate,1 trip & 1 field blank; 6 from Shallow MWs & 1 from Deep MW & 1 Dup, 1 trip & field blank

19 samples for BTEX, MTBE + naphthalene (8260) total, each soil boring & monitoring wells.

1 sample for grain size/hydrometer at screened interval of deep well, located in the source area.

1 sample for grain size/hydrometer at screened interval of shallow well located in the source area.

1 sample for grain size/hydrometer at screened interval of shallow well downgradient of source area.

GROUNDWATER: 24 Field Screens; 15 (3 existing, 6 new MW, 3 new TW,and 3 for trip & field balank & duplicate) wells

39 samples for BTEX, MTBE, & napthalene

39 samples for 1,2-DCA

39 samples for EDB

15 samples for 8 Oxygenates

15 samples for total lead

Implementation Schedule

Start up date: Within 30 days of approval **Completion date:** Within 60 days of approval

Report submittal date: Within 90 days of approval

TIER II ASSESSMENT PLAN

SOUTH CAROLINA
Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Site ID # 02567 **Facility Name** Rhodesway North

Site Maps

1. **Attach a copy of the relevant portion of the USGS topographic map showing the site location.**

2. **Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following :**

North Arrow	Legend with facility name and address,Site ID number,date,and a bar scale
Location of property lines	Streets or highways (indicate names and numbers)
Location of buildings	Identification of located buildings
Paved areas on or adjacent to site	Location of all present and former ASTs and USTs
Previous soil sampling locations	Underground and above ground utilities on or adjacent to site
Previous monitoring well locations	Location of any other potential receptor

Aquifer Characterization **(Check one and provide explanation for choice)**

Pump Test _____ **Slug Tests** 3

According to EPA/540/S-93/503 dated February 1993, the pump test is usually the most reliable type of aquifer test. A pump test is recommended for detailed information on the hydraulic properties of the aquifer. Slug tests often produce estimates which are only accurate within an order of magnitude. *Slug tests may be used during the initial site studies to assist in developing a site conceptual model and in pumping test design.* Slug tests are proposed in the deep well and shallow well in the source area and at a shallow down gradient well.

Small Volume Disposal Type and Method

Soil An estimated 10 drums of petroleum affected soil will be generated during the installation of the proposed field screening and monitoring wells. The soil will be transported to a licensed facility for disposal.

Purge Water An estimated four drums of petroleum affected groundwater will be generated during monitoring well sampling and decontamination. The water will be transported to a licensed facility for disposal.

Additional Comments The actual number and location of permanent monitoring wells will be based on the results of the groundwater field screening analyses.

Legend

- Prop Deep Well
- Shallow FS Point/Prop MW
- Deep FS Point
- Soil Boring
- Shallow FS Point
- ECS–1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street • Agawam, MA 01001
Phone: 1-800-723-3330 Fax: 413-789-2778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

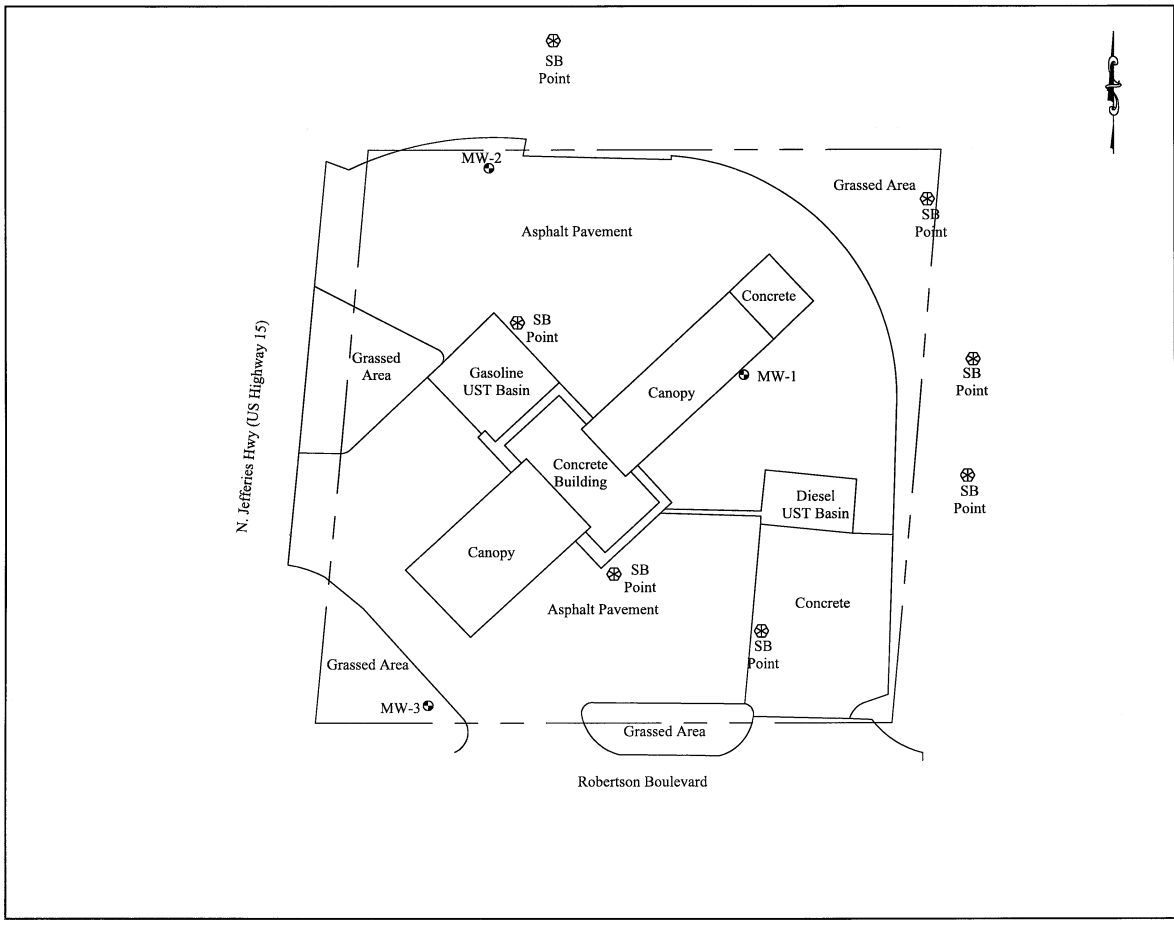
TITLE:
Field Screening Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 150'	8/17/12	14-215778	4



Legend

- Deep FS Point
- Soil Boring
- Shallow FS Point
- ECS-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-782-3530 Fax: 413-782-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: Field Screening Map

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 150'	8/17/12	14-215778	5

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

Aug 2, 2012

ASSESSMENT COMPONENT COST AGREEMENT
SOUTH CAROLINA
Department of Health and Environmental Control
Underground Storage Tank Management Division
State Underground Petroleum Environmental Response Bank Account

Facility Name: Rhodesway North

UST Permit #: 02567 **Cost Agreement #:**

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. **Plan***				
B. Tax Map		x	$50.00	$0.00
C. Tier II or Comp. Plan /QAPP Appendix B	1	x	$525.00	$525.00
2. **Receptor Survey ***		x	$500.00	$0.00
3. **Survey (500 x 500 feet)**				
A. Comprehensive Survey		x	$1,000.00	$0.00
B. Subsurface Geophysical Survey				
1. < 10 meters below grade		x	$2,750.00	$0.00
2. > 10 meters below grade		x	$3,250.00	$0.00
C. Geophysical UST or Drum Survey		x	$1,125.00	$0.00
4. **Mob/Demob (Each)**				
A. Equipment	2	x	$575.00	$1,150.00
B. Personnel	6	x	$290.00	$1,740.00
C. Adverse Terrain Vehicle to install wells	2	x	$575.00	$1,150.00
5. **Soil Borings (hand auger)* (Feet)**		feet x	$14.00	$0.00
6. **Soil Borings (drilled) & Field Screening ***				
Rate includes collection of water sample or soil sample, and lab or other analyses				
A. Standard *(21 @ 10') (3@40)*	365	feet x	$17.00	$6,205.00
C. Fractured Rock		feet x	$27.50	$0.00
7. **Soil Leachability Model (Each)**		each x	$200.00	$0.00
8. **Abandonment* (per foot)**				
A. 2" diameter or less	365	feet x	$5.00	$1,825.00
B. Greater than 2" to 6" diameter		feet x	$5.50	$0.00
C. Dug/Bored well (up to 6 foot diameter)		feet x	$18.00	$0.00
9. **Well Installation* (per foot)**				
A. Water Table (hand augered)		feet x	$20.00	$0.00
B. Water Table (drill rig)	60	feet x	$38.00	$2,280.00
C. Telescoping/ Pit Cased	120	feet x	$58.00	$6,960.00
D. Rock Drilling		feet x	$58.00	$0.00
E. 2" Rock Coring		feet x	$45.00	$0.00
G. Rock Multi-sampling ports/screens		feet x	$47.20	$0.00
H. Recovery Well (4 inch diameter)		each x	$45.00	$0.00
I. Pushed Pre-packed screen (1.25 diameter)		each x	$18.50	$0.00
J. Rotosonic (2 inch diameter)		each x	$45.00	$0.00
10. **Groundwater Sample Collection / Gauge Depth to Water or Product (Each)**				
A. Groundwater Purge	9	wells x	$55.00	$495.00
B. Air or Vapors		samples x	$90.00	$0.00
C. Water Supply		samples x	$30.00	$0.00
D. Groundwater No Purge or Duplicate	7	samples x	$35.00	$245.00
E. Gauge Well only		per well x	$20.00	$0.00
F. Sample Below Product		wells x	$50.00	$0.00
G. Pasive Diffusion Bag		each x	$40.00	$0.00
H. Field Blank	2	each x	$5.00	$10.00

11. Laboratory Analyses-Groundwater (Each Sample)					
A1. BTEX+Naphth.+ Oxyg's+ 1,2 DCA + Ethanol	39	samples x	$100.00		$3,900.00
AA. Lead, Filtered		samples x	$46.00		$0.00
B1. Rush EPA Method 8260B (All of item A.)		samples x	$143.00		$0.00
C1. Trimethal, Butyl, and Isopropyl Benzenes		samples x	$40.00		$0.00
D. PAH's		samples x	$120.00		$0.00
E. Lead, Unfiltered	15	samples x	$20.00		$300.00
F. EDB by EPA 8011	39	samples x	$55.00		$2,145.00
FF. EDB by EPA Method 8011 Rush		samples x	$75.00		$0.00
G. 8 RCRA Metals		samples x	$140.00		$0.00
H. TPH (9070)		samples x	$55.00		$0.00
I. pH		samples x	$10.00		$0.00
J. BOD		samples x	$40.00		$0.00
P1. Ethanol		samples x	$21.50		$0.00
11. Analyses-Soil (Each Sample)					
Q. BTEX + Naphth.	19	samples x	$100.00		$1,900.00
R. PAH's		samples x	$120.00		$0.00
S. 8 RCRA Metals		samples x	$150.00		$0.00
T. Oil & Grease (9071)		samples x	$60.00		$0.00
U. TPH-DRO (3550B/8015B)		samples x	$65.00		$0.00
V. TPH- GRO (5030B/8015B)		samples x	$65.00		$0.00
W. Grain size/hydrometer	3	samples x	$99.00		$297.00
X. Total Organic Carbon		samples x	$35.00		$0.00
11. Analyses-Air (Each Sample)					
Y. BTEX + Naphthalene		samples x	$247.50		$0.00
11. Analyses-Free Phase Product (Each Sample)					
Z. Hydrocarbon Fuel Identification		samples x	$620.00		$0.00
12. Aquifer Characterization*					
A. Pumping Test		hours x	$120.00		$0.00
B. Slug Test*	3	tests x	$150.00		$450.00
C. Fractured Rock		tests x	$500.00		$0.00
13. Free Product Recovery Rate Test* (Each)		tests x	$120.00		$0.00
14. Fate/Transport Modeling					
A. Mathematical Model		each x	$300.00		$0.00
B. Computer Model		each x	$500.00		$0.00
15. Risk Evaluation					
A. Tier I Risk Evaluation		x	$300.00		$0.00
B. Tier II Risk Evaluation		x	$500.00		$0.00
16. Subsequent Survey*	1	x	$300.00		$300.00
17. Disposal* (gallons or tons)					
A. Wastewater	275	gallons x	$0.80		$220.00
B1. Free Product		gallons x	$0.85		$0.00
C. Soil Treatment/Disposal	3	tons x	$72.50		$217.50
D. Drilling fluids		gallons x	$0.80		$0.00
18. Miscellaneous (attach receipts)					
		x			$0.00
		x			$0.00
		x			$0.00
20. Tier I Assessment (Use DHEC 3665 form)		x			$0.00
21. IGWA (Use DHEC 3666 form)		x			$0.00
22. Corrective Action (Use DHEC 3667 form)		x			$0.00

23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A. 8-hour Event*		each	x	$3,000.00	$0.00
B. AFVR per-hour Continuance		per hour	x	$204.00	$0.00
C. Off-gas treatment per-hour Continuance		per hour	x	$35.00	$0.00
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A. New GAC System Installation*		each	x	$2,500.00	$0.00
B1. Refurbished GAC Sys. Install*		each	x	$1,180.00	$0.00
C. Filter replacement/removal*		each	x	$450.00	$0.00
D1. GAC System removal, cleaning, & refurbishment*		each	x	$720.00	$0.00
E. GAC System housing		each	x	$450.00	$0.00
F. In-line particulate filter		each	x	$150.00	$0.00
G. Additional piping & fittings		feet	x	$4.00	$0.00
25. **Well Repair**					
A. Additional Copies of the Report Delivered		each	x	$32.50	$0.00
B. Repair 2x2 MW pad		each	x	$100.00	$0.00
C. Repair 4x4 MW pad		each	x	$150.00	$0.00
D. Repair well vault		each	x	$225.00	$0.00
F. Replace well cover bolts		each	x	$10.00	$0.00
G. Replace locking well cap & lock		each	x	$15.00	$0.00
H. Replace/Repair stick-up		each	x	$137.50	$0.00
I. Convert Flush-mount to Stick-up		each	x	$175.00	$0.00
J. Convert Stick-up to Flush-mount		each	x	$125.00	$0.00
K. Replace missing/illegible well ID plate		each	x	$22.50	$0.00
Report Prep & Project Management	15%	x		$32,314.50	$4,847.18
TOTAL					$37,161.68

*The appropriate mobilization cost can be added to complete these tasks, as necessary

D H E C
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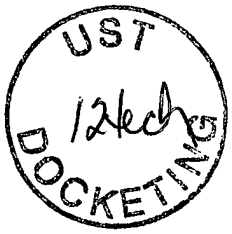
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment



MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

SEP 0 6 2012

Re: Tier II Assessment Directive
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567; CA # 44181; MWA #UMW-24730
Release Reported April 14, 2011
Tier I Assessment Report received July 11, 2012
QAPP Contractor Addendum Revision #1 received August 23, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced addendum submitted on your behalf by Environmental Compliance Services, Incorporated. The Tier I Report indicated that petroleum Chemicals of Concern (CoC) are present in the soil and groundwater at concentrations that exceed risk-based screening levels. The Tier II Assessment should be conducted in accordance with the UST Quality Assurance Program Plan (QAPP) and in compliance with all applicable regulations and the submitted site specific QAPP Contractor Addendum. A copy of the UST QAPP is available at http://www.scdhec.gov/environment/lwm/html/ust.htm.

Assessment activities at the site should begin immediately upon receipt of this letter. Cost agreement number 44181 has been approved for the amount shown on the enclosed cost agreement form for installation of up to twenty-four temporary, six shallow and three deep monitoring wells plus sampling the entire monitoring well network to define the horizontal and vertical extent of dissolved CoC. Please be aware that the July 1, 2011 State Underground Petroleum Environmental Response Bank (SUPERB) Allowable Costs sheet states that "If the vertical and horizontal extent of chemicals of concern is not fully defined by the tier report, the Agency may not approve additional future mobilizations for additional screening or well installation." Any screening point that is converted to a permanent monitoring well will be reimbursed at the approved well installation rate. **Please contact the Agency prior to well installation for concurrence regarding the final well locations. All shallow wells are to be installed with screen intervals that bracket the water table.** Shallow wells should have a 10-foot screen. **The SUPERB Account cannot reimburse costs for any shallow well with a screen that does not properly bracket the water table.**

A groundwater sample from each water supply well within 1,000 feet of the facility should be collected and analyzed for BTEX, naphthalene, 8 oxygenates, 1,2-DCA, ethanol, and EDB. Existing groundwater monitoring wells with a screen that brackets the water table do not need to be purged prior to collection of a groundwater sample. Groundwater samples from the monitoring well network should be collected and analyzed for BTEX, naphthalene, 8 oxygenates, 1,2-DCA, ethanol, lead, and EDB. Please collect two soil samples for grain size/hydrometer testing from the screen interval of the deep pit cased wells. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, plus field and trip blanks.

The Tier II Assessment Report, contractor checklist, and invoice are due within 90 days from the date of this letter. The report (a signed .pdf copy on CD is preferred) submitted at the completion of these activities should include information outlined in the UST QAPP to include the following:

- Geological cross sections that include the shallow and deep monitoring wells.
- Boring logs and well logs (DHEC form 1903) signed by a well driller licensed in the state of South Carolina for each new temporary or permanent monitoring well in accordance with the South Carolina Well Standards, R.61-71. 1903 forms are required for field screening borings (whether direct push or drilled) where a sample is extracted for analysis.
- A CoC map based on current groundwater laboratory analytical data. The groundwater data should be adjacent to the relevant monitoring well location.
- The percentage of sand, silt, and clay from the screen interval of the down gradient shallow and deep well pair.
- Groundwater elevations, depth to groundwater, measurable free product thickness (where applicable), total well depth and screened interval for all monitoring wells associated with the site, unless otherwise directed by the Division, shall be presented in tabular format. Historical groundwater laboratory analytical data and depth to groundwater, and product if applicable, for this and all previous monitoring events for all monitoring wells shall be presented in tabular format.
- A groundwater elevation contour map of the site based on current groundwater potentiometric data. A second contour map will be necessary if three or more deep wells are installed.
- Manifests for any contaminated soil and/or groundwater removed from the site for treatment and/or disposal.
- Signature and seal by a professional geologist or engineer registered in the State of South Carolina.
- According to R.61-98 Section IV.C.1 all plans, reports, invoices, and other documents relating to site rehabilitation activities which have been prepared or approved by a certified contractor shall be signed by the certified contractor and bear his certification number.

Cost agreement number 44181 has been approved for the amount shown on the enclosed cost agreement. Please note the following changes to the submitted cost agreement:

- The number of personnel mobilizations have been reduced to five since ECS conducted the Tier I and did not need to revisit the site for QAPP preparation.
- While two adverse terrain mobilizations have been approved, please include invoices for equipment rental or payment for clearing for screening and well installation activities.
- The number of laboratory analyses for BTEX, naphthalene, 8 oxygenates, 1,2-DCA, ethanol has been reduced to 20 since analyses of screening samples is included in the item 6. Soil Borings & Field Screening per foot rate.
- The number of laboratory analyses for lead has been reduced by two. Laboratory analyses of field and trip blanks are not required for metals.
- The number of laboratory analyses for EDB has been reduced to 19 since analyses of screening samples is included in the item 6. Soil Borings & Field Screening per foot rate. Please also note analysis of the trip blank is no longer required for EDB.

According to Division records, the release at the facility was reported to the Agency on April 14, 2011. In accordance with Section 44-2-40(D) of the State Underground Petroleum Environmental Response Bank (SUPERB) Account, you are responsible for the first $25,000 of site rehabilitation costs. Please be sure to provide proof of costs that will be applied to the deductible with the invoice. Acceptable proof or payment of deductible costs include a copy of the cancelled check (front and back) that made payment to your contractor or a signed notarized statement by your site rehabilitation contractor for the amount that was paid directly to your contractor. Environmental Compliance Services, Incorporated can submit an invoice for direct payment from State Underground Petroleum Environmental Response Bank (SUPERB) Account for preapproved costs that exceed the $25,000 deductible. An interim well drilling invoice may not be submitted for this scope of work as the deductible has not been met. By law, the SUPERB Account cannot compensate any costs that are not

pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available. The Division, because of unnecessary dilution, cannot make decisions if the reporting limit of individual petroleum CoC exceeds Risk-Based Screening Levels (RBSLs). The Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release. Note that the Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The Division requires that laboratories be certified through the Agency's Office of Environmental Laboratory Certification for the oxygenate compounds.

Please note that you and/or your contractor are responsible for obtaining all off-site access agreements and/or encroachment permits necessary for this scope of work.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the CoC concentrations based on laboratory analysis are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Enc: Approved Cost Agreement
Monitoring Well Approval
Signed Site Specific QAPP Contractor Addendum

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708 (with enc.)
Technical file (with enc.)

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

Monitoring Well Approval

Approval is hereby granted to:	Environmental Compliance Services, Incorporated
(on behalf of):	Rhodes Oil Company
Facility:	Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit Number:	02567
County:	Colleton

This approval is for the installation of 24 Temporary, 6 shallow and 3 deep groundwater monitoring wells. The monitoring wells are to be installed in the approved locations. The monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Arthur Shrader (tel: 803-896-6669 or e-mail: shradeaa@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **August 24, 2012** **Approval #:** **UMW-24730**

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Rhodesway North; UST Permit #02567

1400 Jefferies Highway, Walterboro, SC

Prepared by:
Micheal Clea
Environmental Compliance Services, Inc.
13504 South Point Blvd, Ste F
Charlotte, NC 28273

Date: August 13, 2012
Certified UST Site Rehabilitation Contractor #358
Environmental Compliance Services, Inc.

Approvals:

Art Shrader SC DHEC Project Manager	Signature	Date 8/24/12
Micheal Clea Contractor Project Manager	Signature	Date 8-21-2012
Kurt Blevins Site Rehabilitation Contractor	Signature	Date 8/21/2012
Craig L. Kennedy, PG Project Verifier/QA Manager	Signature	Date 8/20/2012
for Jeff Graham Laboratory Director	Signature	Date 8/17/12
Joshua Slusarczyk Shield Engineering Lab Director	Signature	Date 8-17-12

Approved Cost Agreement 44181

Facility: 02567 RHODESWAY NORTH
SHRADEAA
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		C	TIER II/COMP. PLAN/QAPP APP B	1.0000	525.00	525.00
04 MOB/DEMOB						
		A	EQUIPMENT	2.0000	575.00	1,150.00
		B	PERSONNEL	5.0000	290.00	1,450.00
		C	ADVERSE TERRAIN VEHICLE	2.0000	575.00	1,150.00
06 SOIL BORINGS (DRILLED)						
		A	SOIL BORINGS & FLD SCREENING	365.0000	17.00	6,205.00
08 ABANDONMENT						
		A	ABANDONMENT 2" DIA OR LESS	365.0000	5.00	1,825.00
09 WELL INSTALLATION						
		B	WATER TABLE (DRILLED)	60.0000	38.00	2,280.00
		C	TELESCOPING	120.0000	58.00	6,960.00
10 SAMPLE COLLECTION						
		A	GROUND WATER	9.0000	55.00	495.00
		D	GROUNDWATER NO-PURGE	7.0000	35.00	245.00
		H	FIELD BLANK	2.0000	5.00	10.00
11 ANALYSES						
	GW GROUNDWATER	A1	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	20.0000	100.00	2,000.00
		E	LEAD	15.0000	20.00	300.00
		F	EDB	19.0000	55.00	1,045.00
	SOIL SOIL	Q	BTEX+NAPTH	19.0000	100.00	1,900.00
		W	GRAIN SIZE/HYDROMETER	3.0000	99.00	297.00
12 AQUIFER CHARACTERIZATION						
		B	SLUG TEST	3.0000	150.00	450.00
16 SUBSEQUENT SURVEY						
			SUBSEQUENT SURVEY	1.0000	300.00	300.00
17 DISPOSAL						
		A	WASTEWATER	275.0000	0.80	220.00
		C	SOIL (TREATMENT/DISPOSAL)	3.0000	72.50	217.50
19 RPT/PROJECT MNGT & COORDINATIO						
		PCT	PERCENT	0.1500	29,024.50	4,353.68
				Total Amount		33,378.18

D H E C
PROMOTE PROTECT PROSPER

Shrader, Art A. <shradeaa@dhec.sc.gov>

Probable New Release Rhodesway North (UST Permit # 02567)

1 message

Shrader, Art A. <shradeaa@dhec.sc.gov> Thu, Jan 24, 2013 at 5:26 PM
To: "Place, Denise M." <placedm@dhec.sc.gov>
Cc: "Jones, James R." <jonesjr@dhec.sc.gov>, Brett Schaefer <bschaefer@ecsconsult.com>

I went to Beaufort County today and went by a couple of my sites in Walterboro on the way home.

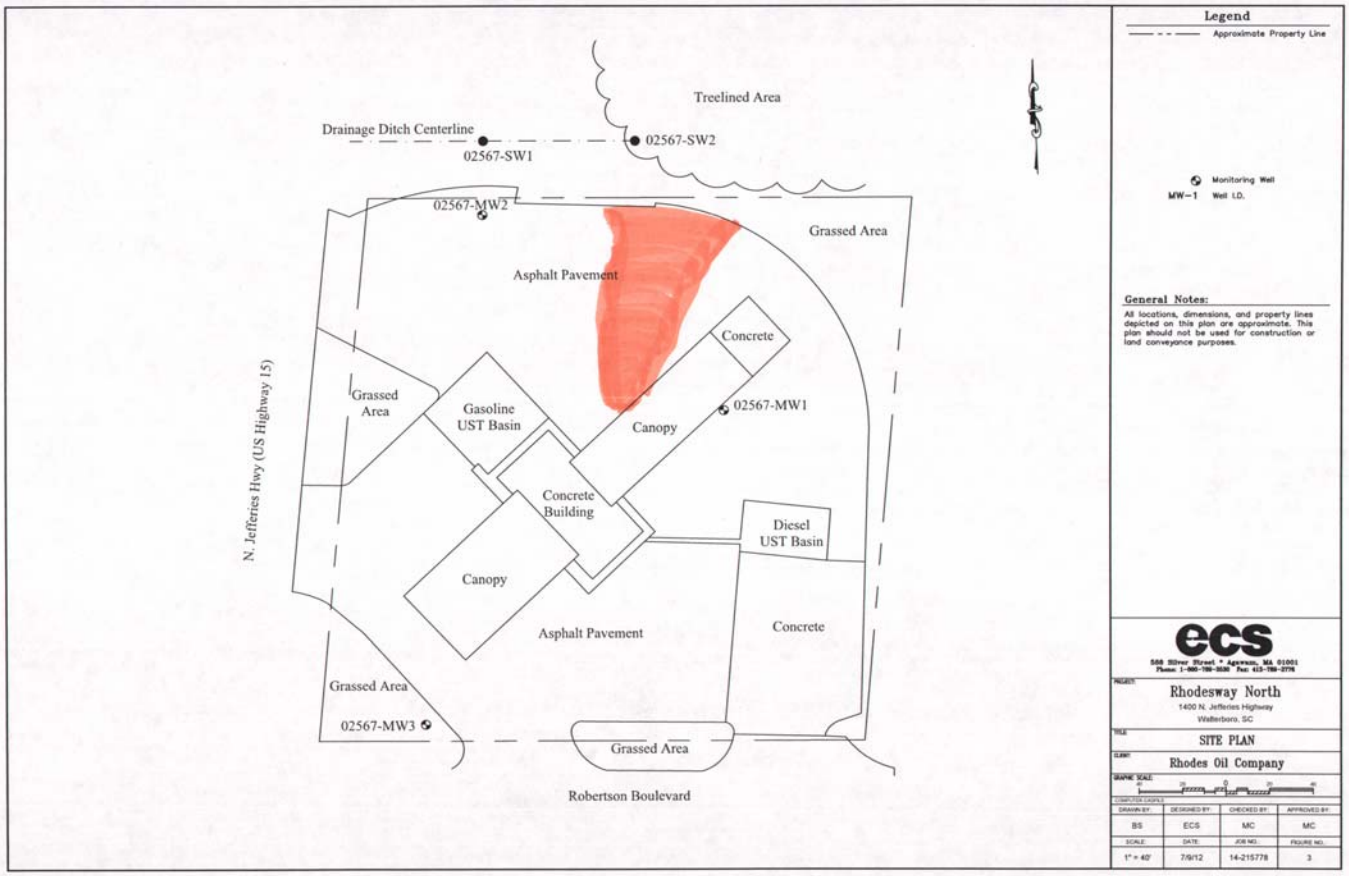
I stopped off at Rhodesway North (1400 North Jeffereries Hwy.) to see if any new wells had been installed.

Looks like there has been a substantive overfill with diesel running across the back of the parking lot all the way to the concrete curb. Please see the attached figure. I was so afraid it was in the ditch, I forgot to take any pictures.
There was some sorbant, but it was not dark in color so I would assume it was just distributed.

I'm really concerned since I am still trying to complete the assessment on an April 2011 diesel release.

–
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

02567 Diesel Release.pdf
179K



Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
566 Silver Street • Agawam, MA 01001
Phone: 1-800-780-3530 Fax: 413-789-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: SITE PLAN

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 40 0 20 40

COMPUTER DISPLAY

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 40'	7/9/12	14-215778	3

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

Certified Mail
91 7199 9991 7031 3719 2746

FEB 07 2013

UST 14 tech DOCKETING

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

Re: **Notice of Alleged Violation – Repeat Offense**
Tier II Assessment Directive
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567; CA # 44181; MWA #UMW-24730
Release Reported April 14, 2011
Notice of Alleged Violation for Tier I dated May 31, 2012
Tier I Assessment Report received July 11, 2012
QAPP Contractor Addendum Revision #1 received August 23, 2012
Tier II Directive letter dated September 6, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) directed you in September 2012 to complete a Tier II Assessment to define the extent of the petroleum Chemicals of Concern (CoC) with the report due on or before December 6, 2012. Based on an e-mail, a two months extension was granted to obtain off site access. To date the required report has not been received. In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, the assessment must be conducted as chemicals of concern are above the risk-based-screening levels.

Implementation of this scope of work should proceed upon receipt of this correspondence. **Please submit the report on or before Thursday, April 18, 2013. Should you not submit the Tier II Assessment on or before this date, this office will initiate further enforcement action.**

On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

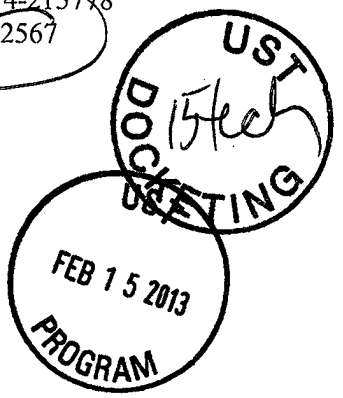
cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708
Environmental Compliance Services, Inc. Contractor Certification File
~~Technical file~~

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

Mr. Arthur Shrader
SCDHEC
UST Program – Assessment Section
2600 Bull Street
Columbia, South Carolina 29201

February 14, 2013
ECS Project No. 14-215778
UST Permit No. 02567



RE: Rhodesway North
1400 N. Jefferies Hwy
Walterboro, South Carolina

Dear Mr. Shrader:

Environmental Compliance Services, Inc. (ECS) on behalf of Rhodes Oil Company, respectfully requests assistance from DHEC with obtaining off-site access from adjacent property owners for the purpose of completing the groundwater assessment activities at the referenced site and in association with CA #44181.

On September 12, 2012, October 11, 2012 and January 30, 2013, request for access was mailed via USPS to the following adjacent property owner and address:

Paul Walker
PO Box 1131
Walterboro, SC 29488

The initial mailing was regular USPS and the two following mailings were sent certified mail. Phone calls made between the sent dates have not yielded conversations (only left voicemails) with the property owner. A copy of the most recent access request has been included along with copies of the certified return receipts for the letters.

On September 12, 2012, October 11, 2012 and January 30, 2013, request for access was mailed via USPS to the following adjacent property owner and address:

Jessica Richardson
BB&T
PO Box 167
Winston-Salem, NC 27102-0167

The initial mailing was regular USPS and the two following mailings were sent certified mail. Phone calls made between the sent dates have not yielded conversations (only left voicemails) with the property owner. A copy of the most recent access request has been included along with copies of the certified return receipts for the letters.

Printed on recycled, carbon neutral paper

Access along the DOT Right-of-Way was considered and later determined not a viable option due to the groundwater flow direction towards the northeast. The subject site is located on the northeast corner of the intersection of Robertson Blvd and Jefferies Hwy.

Environmental Compliance Services respectfully requests assistance from DHEC in obtaining the necessary access agreements for assessment activities on the adjacent properties. Environmental Compliance Services plans to proceed with assessment activities for CA #44181 on the subject property and other adjacent properties if no response is received within 30 days from the date of this letter, unless otherwise directed by the DHEC.

Enclosed please find copies of the off-site access letters sent to the property owners and telephone records with property owners. Please feel free to contact the undersigned or Branch Manager Mr. Kurt Blevins at (800) 627-0493, or you may reach us by email at bschaefer@ecsconsult.com or kblevins@ecsconsult.com.

Sincerely,
ENVIRONMENTAL COMPLIANCE SERVICES, INC.

Brett G. Schaefer, PE
Project Manager

cc: Rhodes Oil Company

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

January 30, 2013

Mr. Paul Walker
PO Box 1131
Walterboro, SC 29488

RE: Right to Enter Agreement for Parcel ID 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
ECS Project No. – 14-215778
SCDHEC UST#02567

Dear Mr. Walker:

Environmental Compliance Services, Inc. (ECS) has been requested by the South Carolina Department of Health and Environmental Control (SCDHEC), as the selected environmental contractor for Rhodes Oil Company, to conduct environmental assessment activities on the Rhodesway North property and adjacent properties. These activities have been designed and mandated by Mr. Arthur Shrader, a Hydrogeologist employed with SCDHEC, and are developed for the sole purpose of protecting human health and the environment.

A release to the environment was reported at the Rhodesway North site on April 14, 2011. The Colleton County tax records indicate you are the owner of the properties north and northeast of the Rhodesway North site, and that your property Parcel IDs are 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000. Adjacent property owners bear no liability for any impact caused by the release.

SCDHEC has proposed locations on your property for the installation of groundwater monitoring wells. Samples will be collected from the monitoring wells for laboratory analysis for petroleum hydrocarbon compounds. The wells will be finished with a flush-mounted 8-inch diameter steel well cover and 2 foot by 2 foot concrete pad which cannot be seen from a distance, and will be neither an eyesore nor a problem for landscaping or parking activities. Any soils, tracks, or any other residual evidence of our activities will be carefully raked or swept out, and if necessary, the ground surface will be fertilized and seeded.

SCDHEC's goal is to protect human health and the environment in the State of South Carolina. We often seek the help of South Carolina's citizens as we work to meet SCDHEC's goals. All assessment activities are currently initiated and funded by the State of South Carolina. All responsibility for the financial elements of the environmental assessment activities rests upon the State and Rhodes Oil Company. Your assistance is needed and bears no financial responsibility whatsoever. We also pledge not to diminish the appearance of your site in any way.

To help SCDHEC complete the assessment activities it believes are necessary to protect human health and the environment we have included a Right to Enter Agreement for Conducting Subsurface Investigations. This Agreement allows us to perform the activities described above, and to sample the wells unobtrusively approximately two times per year (it takes about 10 minutes to sample one well). When the wells are deemed by SCDHEC to no longer be necessary, ECS will properly abandon the wells and no evidence of their former presence, or our activities, will remain. Please sign and return the Agreement in the envelope that has been provided.

Your cooperation in this matter is greatly appreciated by SCDHEC, ECS, and Rhodes Oil Company. Please do not hesitate to contact the undersigned at (800) 627-0493 or Mr. Arthur Shrader of the SCDHEC at (803) 896-6669 if you have any questions or require additional information.

Sincerely,

Brett G. Schaefer, PE
ECS Charlotte Project Manager

Enclosure

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☐ Right to Enter **Granted.**

☐ Right to Enter **Denied.**

_____
Telephone Number

_____
Signature
Property Owner or Agent

_____
Print Name
Property Owner or Agent

_____
Date

Paul Walker

Rhodesway North
ECS Job # 14-215778

Brett G. Schaefer

Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

1/30/13

Date

147-11
@108
Ac: 0
DANDRIDGE RD
147-11
@035
Ac: 0
147-00
@104
Ac: 7
JEFFERIES HWY
147-11
@113
Ac: 0
147-00
@088
Ac: 1
147-11
@109
Ac: 2.4
147-00
@107
Ac: 1.2
147-00
@016
Ac: 69.2
147-00
@103
Ac: 1.5
147-00
@089
Ac: 1.3
147-00
@016
Ac: 69.2
147-00
@097
Ac: 1.8
147-00
@094
Ac: 0.7
147-15
@001
Ac: 1.4
147-15
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@157
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@164
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@100
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@116
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@120
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@132
Ac: 9
ROBERTSON BLVD
N JEFFERIES BLVD
147-15
@056
Ac: 4.7
147-15
@002
Ac: 0
147-15
@004
Ac: 2.2
147-15
@009
Ac: 14.2
147-00
@027
Ac: 74.6

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Paul Walker
PO Box 1131
Walterboro, SC 29488

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Traci Williams ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery
Traci Williams OCT 15 2012

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7012 1010 0002 9104 0486

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Mr. Paul Walker
PO Box 1131
Walterboro, SC 29488

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Jamie Reese ☐ Agent ☐ Address

B. Received by (Printed Name) C. Date of Delive
Jamie Reese 02-07-1

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandi
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7012 1010 0002 9104 0165

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1

7012 1010 0002 9104 0486

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

pd 10/11/12
Postmark Here
$5.95
neopost

Sent To Paul Walker
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

7012 1010 0002 9104 0165

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$ 0.65
Certified Fee	2.35
Return Receipt Fee (Endorsement Required)	1.95
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.95

pd 1/30/13
Postmark Here

Sent To Paul Walker
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

January 30, 2013

Jessica Richardson
Branch Banking & Trust Company
PO Box 167
Winston-Salem, NC 27102-0167

RE: Right to Enter Agreement for Parcel ID 147-00-00-157.000
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
ECS Project No. – 14-215778
SCDHEC UST#02567

Ms. Richardson:

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A release to the environment was reported at the Rhodesway North site on April 14, 2011. The Colleton County tax records indicate you are the owner of the property east of the Rhodesway North site, and that your property Parcel ID is 147-00-00-157.000. Adjacent property owners bear no liability for any impact caused by the release.

SCDHEC has proposed locations on your property for the installation of groundwater monitoring wells. Samples will be collected from the monitoring wells for laboratory analysis for petroleum hydrocarbon compounds. The wells will be finished with a flush-mounted 8-inch diameter steel well cover and 2 foot by 2 foot concrete pad which cannot be seen from a distance, and will be neither an eyesore nor a problem for landscaping or parking activities. Any soils, tracks, or any other residual evidence of our activities will be carefully raked or swept out, and if necessary, the ground surface will be fertilized and seeded.

SCDHEC's goal is to protect human health and the environment in the State of South Carolina. We often seek the help of South Carolina's citizens as we work to meet SCDHEC's goals. All assessment activities are currently initiated and funded by the State of South Carolina. All responsibility for the financial elements of the environmental assessment activities rests upon the State and Rhodes Oil Company. Your assistance is needed and bears no financial responsibility whatsoever. We also pledge not to diminish the appearance of your site in any way.

To help SCDHEC complete the assessment activities it believes are necessary to protect human health and the environment we have included a Right to Enter Agreement for Conducting Subsurface Investigations. This Agreement allows us to perform the activities described above, and to sample the wells unobtrusively approximately two times per year (it takes about 10 minutes to sample one well). When the wells are deemed by SCDHEC to no longer be necessary, ECS will properly abandon the wells and no evidence of their former presence, or our activities, will remain. Please sign and return the Agreement in the envelope that has been provided.

Your cooperation in this matter is greatly appreciated by SCDHEC, ECS, and Rhodes Oil Company. Please do not hesitate to contact the undersigned at (800) 627-0493 or Mr. Arthur Shrader of the SCDHEC at (803) 896-6669 if you have any questions or require additional information.

Sincerely,

Brett G. Schaefer, PE
ECS Charlotte Project Manager

Enclosure

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-157.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☐ Right to Enter **Granted.**

☐ Right to Enter **Denied.**

Telephone Number

Signature
Property Owner or Agent

Print Name
Property Owner or Agent

Date

Brett G. Schaefer

Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

1/30/13

Date

Branch Banking & Trust Company
Rhodesway North
ECS Job # 14-215778

147-11
@108
Ac: 0
DANDRIDGE RD
147-11
@035
Ac: 0
147-11
@113
Ac: 0
147-11
@109
Ac: 2.4
JEFFERIES HWY
147-00
@104
Ac: 7
147-00
@088
Ac: 1
147-00
@107
Ac: 1.2
147-00
@016
Ac: 69.2
147-00
@103
Ac: 1.5
147-00
@089
Ac: 1.3
147-00
@016
Ac: 68.2
147-00
@097
Ac: 1.8
147-00
@094
Ac: 0.7
147-15
@001
Ac: 1.4
147-15
@057
Ac: 1.4
147-00
@157
Ac: 1
147-00
@164
Ac: 1
147-00
@100
Ac: 0.9
147-00
@109
Ac: 0.8
147-00
@113
Ac: 0.4
147-00
@111
Ac: 0.9
147-00
@116
Ac: 0.9
147-00
@120
Ac: 0.9
147-00
@132
Ac: 9
ROBERTSON BLVD
N JEFFERIES BLVD
147-15
@056
Ac: 4.7
147-15
@002
Ac: 0
147-15
@004
Ac: 2.2
147-15
@009
Ac: 14.2
147-00
@027
Ac: 74.6

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jessica Richardson
BB+T Company
PO Box 167
Winston-Salem, NC
27102-0167

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

MAIN OFFICE FEB 2013 U.S.

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7012 1010 0002 9104 0158

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Branch Banking + Trust
PO Box 167
Winston-Salem, NC 27102-0167

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

MAIN OFFICE OCT. 15 2012 WINSTON-SALEM, NC 27101 U.S.

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7012 1010 0002 9104 0479

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-15

7012 1010 0002 9104 0158

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$ 5.95

1/30/13 Postmark Here
pd
neopost

Sent To Jessica Richardson BB+T
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

7012 1010 0002 9104 0479

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

For delivery information visit our website at www.usps.com®

OFFICIAL USE

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

10/11/12 Postmark Here
$2.75
neopost

Sent To Branch
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

D H E C
PROMOTE PROTECT PROSPER
Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

FEB 19 2013

MR PAUL WALKER
PO BOX 1131
WALTERBORO SC 29488-1131

Re: Request for Property Right of Entry
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit # 02567
Access to Adjacent Property North and Northeast of Rhodesway North in Walterboro, SC
Tax ID # 147-00-00-016.00, 147-00-00-088.00, and 147-00-00-089.00
Colleton County

Dear Mr. Walker:

The Underground Storage Tank (UST) Division directed Rhodes Oil Company, Incorporated as the party responsible for the release at Rhodesway North, to perform work to assess a reported petroleum release. Environmental Compliance Services, Incorporated (ECS) is currently conducting the environmental assessment for Rhodes Oil Company, Incorporated. ECS requires access to your property in order to install temporary screening points and monitoring wells if necessary, to fully assess the effects of the petroleum release. These screening points and monitoring well locations can be adjusted to meet your approval. ECS will immediately repair any damage to your property created by the installation or abandonment of the screening points or monitoring wells with no cost to you. A copy of ECS' letter requesting property access is attached for your information.

The monitoring wells will be constructed in accordance with the South Carolina Well Standards and Regulations. They will be completed at grade and will be completed at the surface with a small diameter manhole cover and 1 foot by 1 foot concrete pad. The wellhead completion will not interfere with normal usage of your property. The temporary screening points will be installed by a Geoprobe™ drill and will be used to sample soil and groundwater. They will be properly abandoned upon completion, and no permanent effects will remain on your property.

Please sign the enclosed right of entry form and return it to my attention within fifteen days of the date of this letter. If you have any questions, please contact me at (803) 896-6669. Technical questions about well installation should be addressed to Mr. Brett Schaefer, P.E. at ECS at 800-627-0493. Thank you for your assistance regarding this matter.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Right of Entry Form
ECS Request for Property Access Letter dated January 30, 2013

cc: Mr. Smith, Rhodes Oil Company, PO Box 1545, Walterboro, SC 29488-1545 (without enc)
Environmental Compliance Services, Inc. PO Box PO Box 3528, Fort Mill, SC 29708 (with enc)
Technical File (with enc)

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK DIVISION
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6241

RIGHT OF ENTRY
Tax Map # 147-00-00-016.00, 147-00-00-088.00, and 147-00-00-089.00

I, _____ certify that I am the legal owner or the authorized representative for _____ (owner) of the property described below. I understand locations for screening points or monitoring wells on the property can be adjusted and I will be provided a sketch map indicating the location(s) of the work to be performed. Permission is hereby granted to The Rhodes Oil Company Incorporated and/or the Agency or their agents to enter the referenced property for the following purposes:

Name of Facility (if appropriate) : _____

Street Address : _____

City, State, ZIP : Walterboro, South Carolina

1) **Drilling of screening points. The work will be properly abandoned upon completion, and no permanent effects shall remain on site.**
2) **Installing monitoring wells. I understand that these wells will remain on the property until cleanup is complete.**
3) **Additionally, the Agency and Rhodes Oil Company or its agents will access the property at reasonable times for measurement and/or collection of groundwater samples.**
4) **The monitoring wells will be properly abandoned upon completion of remediation activities.**

NAME (Please print) :_____

SIGNATURE : _____

WITNESS : _____

DATE SIGNED : _____

Contact Telephone Number to Coordinate Dates of Work _____

Please Return to the Attention of Arthur Shrader, 2600 Bull St, Columbia, SC 29201
Reference UST Permit # 02567

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

January 30, 2013

Mr. Paul Walker
PO Box 1131
Walterboro, SC 29488

RE: Right to Enter Agreement for Parcel ID 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
ECS Project No. – 14-215778
SCDHEC UST#02567

Dear Mr. Walker:

Environmental Compliance Services, Inc. (ECS) has been requested by the South Carolina Department of Health and Environmental Control (SCDHEC), as the selected environmental contractor for Rhodes Oil Company, to conduct environmental assessment activities on the Rhodesway North property and adjacent properties. These activities have been designed and mandated by Mr. Arthur Shrader, a Hydrogeologist employed with SCDHEC, and are developed for the sole purpose of protecting human health and the environment.

A release to the environment was reported at the Rhodesway North site on April 14, 2011. The Colleton County tax records indicate you are the owner of the properties north and northeast of the Rhodesway North site, and that your property Parcel IDs are 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000. Adjacent property owners bear no liability for any impact caused by the release.

SCDHEC has proposed locations on your property for the installation of groundwater monitoring wells. Samples will be collected from the monitoring wells for laboratory analysis for petroleum hydrocarbon compounds. The wells will be finished with a flush-mounted 8-inch diameter steel well cover and 2 foot by 2 foot concrete pad which cannot be seen from a distance, and will be neither an eyesore nor a problem for landscaping or parking activities. Any soils, tracks, or any other residual evidence of our activities will be carefully raked or swept out, and if necessary, the ground surface will be fertilized and seeded.

SCDHEC's goal is to protect human health and the environment in the State of South Carolina. We often seek the help of South Carolina's citizens as we work to meet SCDHEC's goals. All assessment activities are currently initiated and funded by the State of South Carolina. All responsibility for the financial elements of the environmental assessment activities rests upon the State and Rhodes Oil Company. Your assistance is needed and bears no financial responsibility whatsoever. We also pledge not to diminish the appearance of your site in any way.

To help SCDHEC complete the assessment activities it believes are necessary to protect human health and the environment we have included a Right to Enter Agreement for Conducting Subsurface Investigations. This Agreement allows us to perform the activities described above, and to sample the wells unobtrusively approximately two times per year (it takes about 10 minutes to sample one well). When the wells are deemed by SCDHEC to no longer be necessary, ECS will properly abandon the wells and no evidence of their former presence, or our activities, will remain. Please sign and return the Agreement in the envelope that has been provided.

Your cooperation in this matter is greatly appreciated by SCDHEC, ECS, and Rhodes Oil Company. Please do not hesitate to contact the undersigned at (800) 627-0493 or Mr. Arthur Shrader of the SCDHEC at (803) 896-6669 if you have any questions or require additional information.

Sincerely,

Brett G. Schaefer, PE
ECS Charlotte Project Manager

Enclosure

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☐ Right to Enter **Granted**.

☐ Right to Enter **Denied**.

Telephone Number

Signature
Property Owner or Agent

Brett G. Schaefer

Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

Print Name
Property Owner or Agent

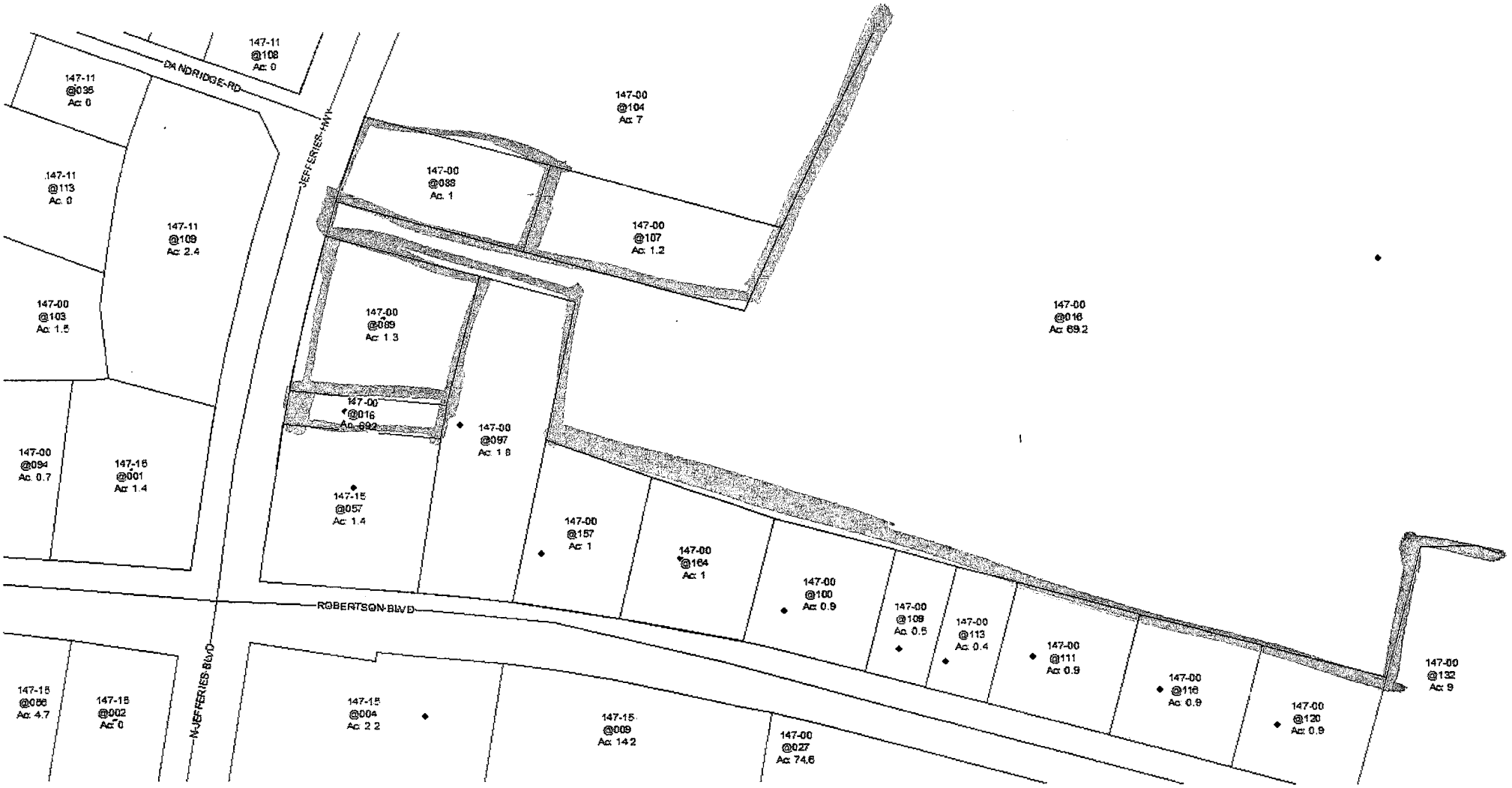
Date

1/30/13

Date

Paul Walker

Rhodesway North
ECS Job # 14-215778


147-11
@108
Ac: 0
DANDRIDGE RD
147-11
@035
Ac: 0
147-11
@113
Ac: 0
147-11
@109
Ac: 2.4
JEFFERIES HWY
147-00
@104
Ac: 7
147-00
@088
Ac: 1
147-00
@107
Ac: 1.2
147-00
@103
Ac: 1.5
147-00
@089
Ac: 1.3
147-00
@016
Ac: 69.2
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@016
Ac: 69.2
147-00
@097
Ac: 1.8
147-00
@094
Ac: 0.7
147-15
@001
Ac: 1.4
147-15
@057
Ac: 1.4
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@157
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147-00
@164
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@100
Ac: 0.9
147-00
@109
Ac: 0.5
147-00
@113
Ac: 0.4
147-00
@111
Ac: 0.9
147-00
@116
Ac: 0.9
147-00
@120
Ac: 0.9
147-00
@132
Ac: 9
ROBERTSON BLVD
N JEFFERIES BLVD
147-15
@056
Ac: 4.7
147-15
@002
Ac: 0
147-15
@004
Ac: 2.2
147-15
@009
Ac: 14.2
147-00
@027
Ac: 74.6

Shrader, Art A. <shradeaa@dhec.sc.gov>

Access Letters for Rhodesway North (UST Permit # 02567)

5 messages

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:00 AM
To: "Schaefer, Brett" <bschaefer@ecsconsult.com>

Brett,

Attached is your request for assistance with access and my two letters to Mr. Paul Walker and Ms. Richardson for your review and any comment(s).

Do you know the business and the street address for any of these properties? I would like to include then in the letters to better identify the properties.
I would have add that info but I cannot find out the info from Colleton County on line.

As soon as I her back from you, I will finalize the letters.

In future letters please do not state in the third paragraph "SCDHEC has proposed locations on your property for the instillation of monitoring wells." Rhodes Oil Company is responsible for obtaining property access, proposing and installing monitoring wells to define the plume.

–
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

02567 Access Letters.pdf
1467K

Brett Schaefer <bschaefer@ecsconsult.com> Tue, Feb 19, 2013 at 9:26 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

Hi Art,

Thank you for your help with this. Unfortunately the properties in question are empty lots with no business or buildings on them. I can give you a general adress location of the property along Robertson Blvd (owned by BB&T) as 715 Robertson Blvd. The properties owned by walker are also empty lots the largest being the wooded area NE of the Rhodesway North property (no associated address as well).

The letters look good to me. I really appreciate you helping me with this. I will let you know if any responses come in so we can proceed with the work.

Randy and I have changed our Access Agreement letters to reflect your request. All future requests will not have that statement in it.

Thanks again!

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

F: 704-583-2744

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Tuesday, February 19, 2013 9:01 AM
To: Schaefer, Brett
Subject: Access Letters for Rhodesway North (UST Permit # 02567)

[Quoted text hidden]

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:44 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Brett,

Thanks.

I thought there was a business north of the facility... This might not be the correct parcel.....

The letter should go out today.

Art
[Quoted text hidden]

Brett Schaefer <bschaefer@ecsconsult.com> Tue, Feb 19, 2013 at 9:46 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

We have access to the business just north of the site, but was hoping for a little more room just in case. The parcel that in between the two businesses north of the site (a small sliver) is actually owned by Mr. Walker.

Thank you.

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

F: 704-583-2744

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Tuesday, February 19, 2013 9:44 AM
To: Brett Schaefer
Subject: Re: Access Letters for Rhodesway North (UST Permit # 02567)

[Quoted text hidden]

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:58 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Brett,

Thanks....

Art
[Quoted text hidden]

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

FEB 19 2013

MS JESSICA RICHARDSON
BRANCH BANKING & TRUST COMPANY
PO BOX 167
WINSTON-SALEM NC 27102-0167

UST DOCKETING

Re: Request for Property Right of Entry
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit # 02567
Access to Adjacent Property West of Rhodesway North in Walterboro, SC
Tax ID # 147-00-00-157.00
Colleton County

Dear Ms. Richardson:

The Underground Storage Tank (UST) Division directed Rhodes Oil Company, Incorporated as the party responsible for the release at Rhodesway North, to perform work to assess a reported petroleum release. Environmental Compliance Services, Incorporated (ECS) is currently conducting the environmental assessment for Rhodes Oil Company, Incorporated. ECS requires access to your property in order to install temporary screening points and monitoring wells if necessary, to fully assess the effects of the petroleum release. These screening points and monitoring well locations can be adjusted to meet your approval. ECS will immediately repair any damage to your property created by the installation or abandonment of the screening points or monitoring wells with no cost to you. A copy of ECS' letter requesting property access is attached for your information.

The monitoring wells will be constructed in accordance with the South Carolina Well Standards and Regulations. They will be completed at grade and will be completed at the surface with a small diameter manhole cover and 1 foot by 1 foot concrete pad. The wellhead completion will not interfere with normal usage of your property. The temporary screening points will be installed by a Geoprobe™ drill and will be used to sample soil and groundwater. They will be properly abandoned upon completion, and no permanent effects will remain on your property.

Please sign the enclosed right of entry form and return it to my attention within fifteen days of the date of this letter. If you have any questions, please contact me at (803) 896-6669. Technical questions about well installation should be addressed to Mr. Brett Schaefer, P.E. at ECS at 800-627-0493. Thank you for your assistance regarding this matter.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Right of Entry Form
ECS Request for Property Access Letter dated January 30, 2013

cc: Mr. Smith, Rhodes Oil Company, PO Box 1545, Walterboro, SC 29488-1545 (without enc)
Environmental Compliance Services, Inc. PO Box PO Box 3528, Fort Mill, SC 29708 (with enc)
Technical File (with enc)

D H E C
PROMOTE PROTECT PROSPER
South Carolina Department of Health
and Environmental Control

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK DIVISION
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6241

RIGHT OF ENTRY
Tax Map # 147-00-00-157.00

I, _____ certify that I am the legal owner or the authorized representative for _____ (owner) of the property described below. I understand locations for screening points or monitoring wells on the property can be adjusted and I will be provided a sketch map indicating the location(s) of the work to be performed. Permission is hereby granted to The Rhodes Oil Company Incorporated and/or the Agency or their agents to enter the referenced property for the following purposes:

Name of Facility (if appropriate) : _____

Street Address : _____

City, State, ZIP : Walterboro, South Carolina

1) Drilling of screening points. The work will be properly abandoned upon completion, and no permanent effects shall remain on site.
2) Installing monitoring wells. I understand that these wells will remain on the property until cleanup is complete.
3) Additionally, the Agency and Rhodes Oil Company or its agents will access the property at reasonable times for measurement and/or collection of groundwater samples.
4) The monitoring wells will be properly abandoned upon completion of remediation activities.

NAME (Please print) :_____

SIGNATURE : _____

WITNESS : _____

DATE SIGNED : _____

Contact Telephone Number to Coordinate Dates of Work _____

Please Return to the Attention of Arthur Shrader, 2600 Bull St, Columbia, SC 29201
Reference UST Permit # 02567

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

January 30, 2013

Jessica Richardson
Branch Banking & Trust Company
PO Box 167
Winston-Salem, NC 27102-0167

RE: Right to Enter Agreement for Parcel ID 147-00-00-157.000
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
ECS Project No. – 14-215778
SCDHEC UST#02567

Ms. Richardson:

Environmental Compliance Services, Inc. (ECS) has been requested by the South Carolina Department of Health and Environmental Control (SCDHEC), as the selected environmental contractor for Rhodes Oil Company, to conduct environmental assessment activities on the Rhodesway North property and adjacent properties. These activities have been designed and mandated by Mr. Arthur Shrader, a Hydrogeologist employed with SCDHEC, and are developed for the sole purpose of protecting human health and the environment.

A release to the environment was reported at the Rhodesway North site on April 14, 2011. The Colleton County tax records indicate you are the owner of the property east of the Rhodesway North site, and that your property Parcel ID is 147-00-00-157.000. Adjacent property owners bear no liability for any impact caused by the release.

SCDHEC has proposed locations on your property for the installation of groundwater monitoring wells. Samples will be collected from the monitoring wells for laboratory analysis for petroleum hydrocarbon compounds. The wells will be finished with a flush-mounted 8-inch diameter steel well cover and 2 foot by 2 foot concrete pad which cannot be seen from a distance, and will be neither an eyesore nor a problem for landscaping or parking activities. Any soils, tracks, or any other residual evidence of our activities will be carefully raked or swept out, and if necessary, the ground surface will be fertilized and seeded.

SCDHEC's goal is to protect human health and the environment in the State of South Carolina. We often seek the help of South Carolina's citizens as we work to meet SCDHEC's goals. All assessment activities are currently initiated and funded by the State of South Carolina. All responsibility for the financial elements of the environmental assessment activities rests upon the State and Rhodes Oil Company. Your assistance is needed and bears no financial responsibility whatsoever. We also pledge not to diminish the appearance of your site in any way.

To help SCDHEC complete the assessment activities it believes are necessary to protect human health and the environment we have included a Right to Enter Agreement for Conducting Subsurface Investigations. This Agreement allows us to perform the activities described above, and to sample the wells unobtrusively approximately two times per year (it takes about 10 minutes to sample one well). When the wells are deemed by SCDHEC to no longer be necessary, ECS will properly abandon the wells and no evidence of their former presence, or our activities, will remain. Please sign and return the Agreement in the envelope that has been provided.

Your cooperation in this matter is greatly appreciated by SCDHEC, ECS, and Rhodes Oil Company. Please do not hesitate to contact the undersigned at (800) 627-0493 or Mr. Arthur Shrader of the SCDHEC at (803) 896-6669 if you have any questions or require additional information.

Sincerely,

Brett G. Schaefer, PE
ECS Charlotte Project Manager

Enclosure

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-157.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☐ Right to Enter **Granted.**

☐ Right to Enter **Denied.**

_____
Telephone Number

_____
Signature
Property Owner or Agent

_____
Print Name
Property Owner or Agent

_____
Date

Brett G. Schaefer

Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

1/30/13

Date

Branch Banking & Trust Company
Rhodesway North
ECS Job # 14-215778

147-11
@108
Ac: 0
DANDRIDGE RD
147-11
@035
Ac: 0
147-11
@113
Ac: 0
147-11
@109
Ac: 2.4
147-00
@103
Ac: 1.5
JEFFERIES HWY
147-00
@104
Ac: 7
147-00
@088
Ac: 1
147-00
@107
Ac: 1.2
147-00
@089
Ac: 1.3
147-00
@016
Ac: 69.2
147-00
@016
Ac: 69.2
147-00
@094
Ac: 0.7
147-15
@001
Ac: 1.4
147-15
@057
Ac: 1.4
147-00
@097
Ac: 1.8
147-00
@157
Ac: 1
147-00
@164
Ac: 1
147-00
@100
Ac: 0.9
147-00
@109
Ac: 0.5
147-00
@113
Ac: 0.4
147-00
@111
Ac: 0.9
147-00
@116
Ac: 0.9
147-00
@120
Ac: 0.9
147-00
@132
Ac: 9
ROBERTSON BLVD
N JEFFERIES BLVD
147-15
@056
Ac: 4.7
147-15
@002
Ac: 0
147-15
@004
Ac: 2.2
147-15
@009
Ac: 14.2
147-00
@027
Ac: 74.6

Shrader, Art A. <shradeaa@dhec.sc.gov>

Access Letters for Rhodesway North (UST Permit # 02567)

5 messages

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:00 AM
To: "Schaefer, Brett" <bschaefer@ecsconsult.com>

Brett,

Attached is your request for assistance with access and my two letters to Mr. Paul Walker and Ms. Richardson for your review and any comment(s).

Do you know the business and the street address for any of these properties? I would like to include then in the letters to better identify the properties.
I would have add that info but I cannot find out the info from Colleton County on line.

As soon as I her back from you, I will finalize the letters.

In future letters please do not state in the third paragraph "SCDHEC has proposed locations on your property for the instillation of monitoring wells." Rhodes Oil Company is responsible for obtaining property access, proposing and installing monitoring wells to define the plume.

–
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

02567 Access Letters.pdf
1467K

Brett Schaefer <bschaefer@ecsconsult.com> Tue, Feb 19, 2013 at 9:26 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

Hi Art,

Thank you for your help with this. Unfortunately the properties in question are empty lots with no business or buildings on them. I can give you a general adress location of the property along Robertson Blvd (owned by BB&T) as 715 Robertson Blvd. The properties owned by walker are also empty lots the largest being the wooded area NE of the Rhodesway North property (no associated address as well).

The letters look good to me. I really appreciate you helping me with this. I will let you know if any responses come in so we can proceed with the work.

Randy and I have changed our Access Agreement letters to reflect your request. All future requests will not have that statement in it.

Thanks again!

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

F: 704-583-2744

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Tuesday, February 19, 2013 9:01 AM
To: Schaefer, Brett
Subject: Access Letters for Rhodesway North (UST Permit # 02567)

[Quoted text hidden]

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:44 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Brett,

Thanks.

I thought there was a business north of the facility... This might not be the correct parcel.....

The letter should go out today.

Art
[Quoted text hidden]

Brett Schaefer <bschaefer@ecsconsult.com> Tue, Feb 19, 2013 at 9:46 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

We have access to the business just north of the site, but was hoping for a little more room just in case. The parcel that in between the two businesses north of the site (a small sliver) is actually owned by Mr. Walker.

Thank you.

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

F: 704-583-2744

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Tuesday, February 19, 2013 9:44 AM
To: Brett Schaefer
Subject: Re: Access Letters for Rhodesway North (UST Permit # 02567)

[Quoted text hidden]

Shrader, Art A. <shradeaa@dhec.sc.gov> Tue, Feb 19, 2013 at 9:58 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Brett,

Thanks....

Art
[Quoted text hidden]

D H E C
PROMOTE PROTECT PROSPER

#02567 Screening DATA

Shrader, Art A. <shradeaa@dhec.sc.gov>

Rhodesway North

2 messages

Brett Schaefer <bschaefer@ecsconsult.com> Thu, Apr 4, 2013 at 9:15 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

Hi Art,

Please find attached a copy of the Field Screening results for Rhodesway North. I have included a map of the field screening locations and a proposed MW map. We could not get any field screening points along Robertson Blvd due to utilities on both sides of the road and no access to the properties along that area. Based on the analytical results the contamination appears to be confined to the site. Please note that FS-10 through FS-12 were installed by hand and the hole kept collapsing beyond five feet. A groundwater sample was collected at 5 feet in those points. Measured DTW was 4.68 ft.

ECS has the monitoring well installation scheduled for April 8 through April 10. Please let me know if you would like any modifications or additions to the monitoring well intallation.

Also please note that the lead contamination in the samples is most likely due to the sediment caught in the sampling containers.

Sincerely,

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

F: 704-583-2744

3 attachments

FS Map-3-25-13.pdf
244K

Proposed MW Map-4-4-13.pdf
75K

FS Groundwater Data - 3-25-13.pdf

76K

Shrader, Art A. <shradeaa@dhec.sc.gov> Thu, Apr 4, 2013 at 10:41 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Brett,

Thanks for sharing the data. I went by yesterday since I was in Walterboro checking wells at another site in town. The ditch between the site and Walker Accounting and Tax Service had water that was moving slowly so please sample the receptor.

I was really shocked to see product in MW-1. Please do a bail down test on MW-1. I will need you to install wells to define the product (0.01') around MW-1 and will need at least two 4" Recovery Wells each approximately 25 feet from MW-1 to help with product recovery.

I'm Ok with the wells as long as the product and plume are defined. I am assuming water is flowing from MW-1 to FS-4 to FS-11 and we will have a "Hot" well, "Warm" well, and "Clean" well to conduct fate and transport modeling. If you need a couple more shallow or deep wells along the downgradient direction for us to model I'm Ok with adding those.

When you get all these additions figured out, please send me the additions (well footage, sample collection, bail down test, disposal, etc.) so we can do an addendum to cost agreement 44181.

Please be sure the surveyor shoots the top of the water elevation so you can add it to the cross sections.

Please be sure and collect a soil sample from the screen interval of the shallow and deep pair at FS-4 and VFS-2 for grain size/hydrometer tests. The percentage of sand, silt and clay is used to calculate seepage velocity and included on the geological cross sections.

Again thanks for the data
Art

PS Tell Rand I went by St George yesterday and the construction of the new wells is good..... Looooooooot of drums.

[Quoted text hidden]

–
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

Brett Schaefer <bschaefer@ecsconsult.com> Thu, Apr 4, 2013 at 10:48 AM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

Thanks for getting back to me. I will work on everything today and get back to you with the additional information as soon as possible. Yes water is flowing in that general direction from MW-1 to FS-11. During the well installations we will also collect a surface water sample.

I'll also pass the word to randy regarding St. George as well.

Brett G. Schaefer, PE

Project Engineer

Environmental Compliance Services, Inc.

P: 704-583-2711

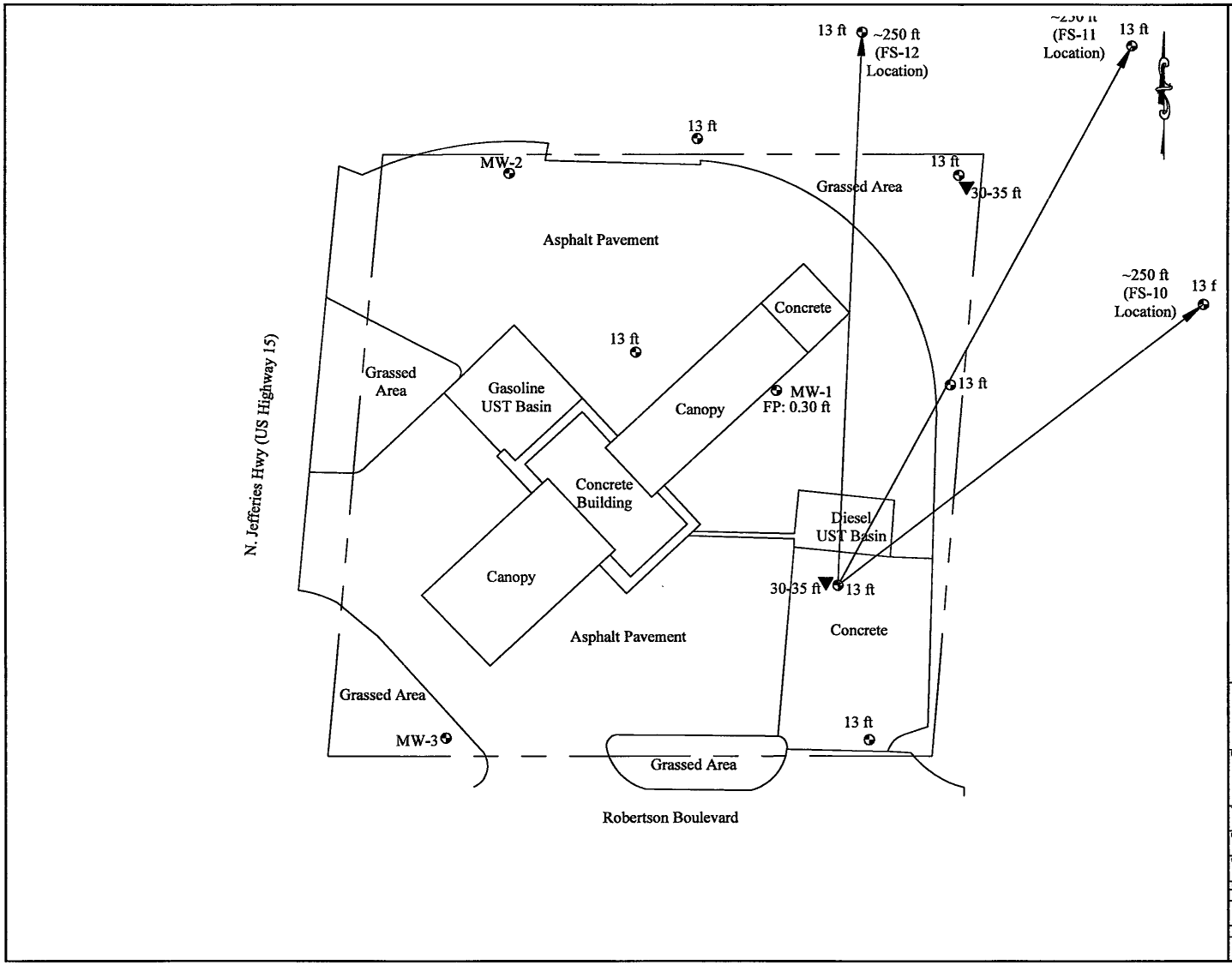
F: 704-583-2744

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Thursday, April 04, 2013 10:41 AM
To: Brett Schaefer
Subject: Re: Rhodesway North

[Quoted text hidden]

Shrader, Art A. <shradeaa@dhec.sc.gov> Thu, Apr 4, 2013 at 10:49 AM
To: Brett Schaefer <bschaefer@ecsconsult.com>

Thanks
[Quoted text hidden]



Legend

- Proposed TW
- Proposed MW
- ECS–1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-8778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

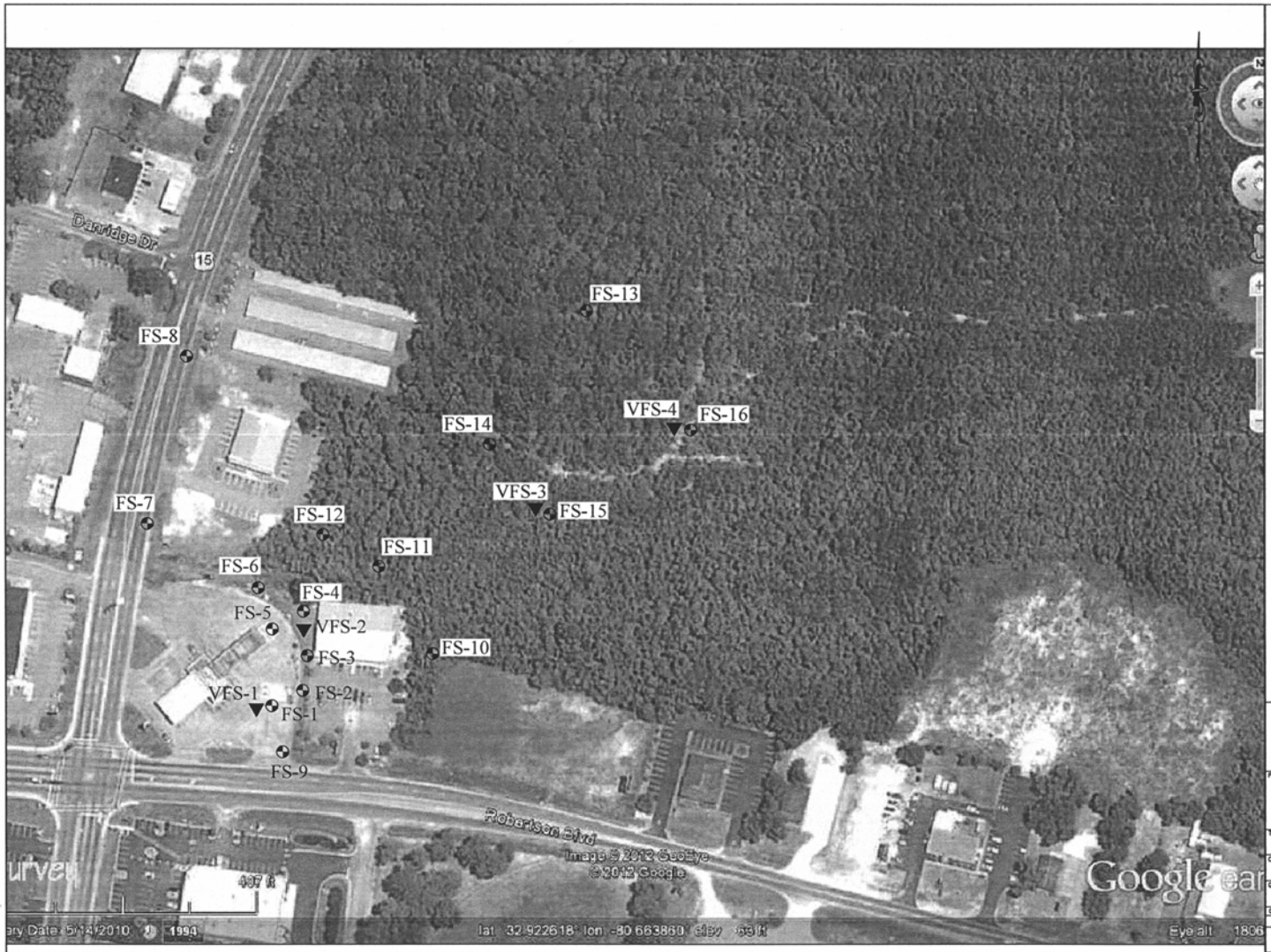
TITLE:
Proposed MW Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO:	FIGURE NO.:
1" = 40'	3/25/13	14-215778	5



Legend

▼ Deep FS Point

Shallow FS Point

ECS-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-709-3530 Fax: 413-789-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: Field Screening Map

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 150'	3/25/13	14-215778	4

Table #
Summary of Analytical Results - Water Samples
RHODES WAY NORTH 14-215778

Analytical Method			EPA 6010 by	EPA 8011	EPA 8260															
Sample ID	Constituent of Concern		Lead	1,2-Dibromoethane (EDB)	1,2-Dichloroethane	3,3-Dimethyl-1-Butanol	Benzene	Diisopropyl ether	Ethanol	Ethyl-tert-butyl ether	Ethylbenzene	Methyl-tert-butyl ether	Naphthalene	Toluene	m&p-Xylene	o-Xylene	tert-Amyl Alcohol	tert-Amylmethyl ether	tert-Butyl Alcohol	tert-Butyl Formate
	Date Collected (mm/dd/yy)	Sample Depth (ft. BGS)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
02567-FS1	03/25/2013	8	**1350**	<0.020	<1000	<20000	**1950**	<1000	<40000	<2000	**4790**	<1000	**1330**	**1570**	13500	5370	<20000	<2000	<20000	<10000
02567-FS10	03/26/2013	5	**2130**	<0.023	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	365	<50.0
02567-FS11	03/26/2013	5	**2240**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS12	03/26/2013	5	**7030**	<0.021	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS13	03/26/2013	10	**676**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS14	03/26/2013	10	**899**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	2.2 J	2.5 J	3.7 J	<5.0	<100	<10.0	<100	<50.0
02567-FS15	03/26/2013	10	**534**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS16	03/26/2013	10	**588**	<0.021	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS2	03/25/2013	8	**1160**	<0.021	<5.0	<100	**6.9**	<5.0	<200	<10.0	<5.0	<5.0	<5.0	1.7 J	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS3	03/25/2013	10	**424**	<0.019	<50.0	<1000	**15900**	<50.0	<2000	<100	**2490**	**781**	**962**	**23600**	8560	3760	**1500**	<100	1200	<500
02567-FS4	03/25/2013	10	**124**	<0.020	<5.0	<100	**30.3**	<5.0	<200	<10.0	<5.0	**786**	<5.0	<5.0	<10.0	<5.0	**385**	<10.0	326	<50.0
02567-FS5	03/25/2013	10	**463**	<0.020	<5.0	<100	**101**	<5.0	<200	<10.0	<5.0	**1430**	<5.0	3.2 J	<10.0	<5.0	**373**	<10.0	821	<50.0
02567-FS6	03/25/2013	10	**8190**	<0.022	<5.0	<100	**5.4**	<5.0	<200	<10.0	<5.0	15.8	2.5 J	1.9 J	<10.0	<5.0	116	<10.0	1360	<50.0
02567-FS7	03/25/2013	10	**6860**	<0.027	<5.0	<100	<5.0	<5.0	<200	<10.0	2.2 J	<5.0	<5.0	<5.0	5.8 J	2.5 J	<100	<10.0	<100	<50.0
02567-FS8	03/25/2013	10	**429**	<0.022	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-FS9	03/26/2013	10	**691**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-VFS1	03/25/2013	18	**191**	<0.020	<5.0	<100	**78.1**	<5.0	<200	<10.0	313	7.3	**106**	78.3	841	242	<100	<10.0	67.1 J	<50.0
02567-VFS2	03/25/2013	20	**394**	<0.021	<5.0	<100	4.9 J	<5.0	<200	<10.0	<5.0	25.5	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-VFS3	03/26/2013	20	**414**	<0.020	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
02567-VFS4	03/26/2013	20	**296**	<0.019	<5.0	<100	<5.0	<5.0	<200	<10.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5.0	<100	<10.0	<100	<50.0
South Carolina RBSL for Groundwater			15	0.05	N/A	N/A	5	N/A	N/A	N/A	700	40	25	1000	N/A	N/A	N/A	N/A	N/A	N/A
South Carolina Action Levels for Groundwater			N/A	N/A	N/A	N/A	N/A	150	10000	47	N/A	N/A	N/A	N/A	N/A	N/A	240	128	1400	N/A

NOTES:
ND = Not Detected
ft. BGS = feet below ground surface
mg/L = milligrams per liter
ug/L = micrograms per liter
Bold data above the RBSL (Risk Based Screening Level)

TIER II ASSESSMENT REPORT
RHODESWAY NORTH
1400 JEFFERIES HIGHWAY
WALTERBORO, COLLETON COUNTY
UST PERMIT NO. 02567
ECS PROJECT NO. 14-215778

Prepared For:

Rhodes Oil Company Inc.
PO Box 1545
Walterboro, South Carolina 29488-1545

Prepared By:

Environmental Compliance Services, Inc.
Post Office Box 3528
Fort Mill, South Carolina 29708

May 2013

Brett G. Schaefer, PE
Project Manager

Craig L. Kennedy, P.G.
SC Registration No. 2425

CRAIG L. KENNEDY
REGISTERED
No. 2425
SOUTH CAROLINA
PROFESSIONAL GEOLOGIST

Table of Contents

1. INTRODUCTION 4

1.1. Owner/Operator Information 4
1.2. Property Owner Information 4
1.3. Contractor Information 4
1.4. Site Information (UST No. 02567) 4
1.5. Well Driller Information 4
1.6. Certified Laboratory Information 4
1.7. Site History 5

2. RECEPTOR SURVEY & SITE DATA 6

2.1. Site Geography 6
2.2. Exposure Analysis 6
2.3. Utilities Survey 6
2.4. Site Geology 7

3. GROUNDWATER & SOIL ASSESSMENT 9

3.1. Groundwater Field Screening 9
3.2. Soil Sampling 9
3.2.1. Soil Analytical Data – Monitoring Wells 9
3.3. Monitoring Well Locations 10
3.4. Monitoring Well Installation 10
3.5. Monitoring Well Gauging 11
3.6. Bail Down Test 11
3.7. Groundwater Sampling 12
3.8. Groundwater Analytical Results 12
3.9. Slug Test Data 13
3.10. Investigative derived waste 13

4. RESULTS & DISCUSSION 14

4.1. Conclusions 14
4.2. Recommendations 14

Tables

Table 1: Summary of Analytical Results - Field Screening Water Samples
Table 2: Summary of Soil Analytical Data – Chemicals of Concern
Table 3: Summary of Groundwater Elevation Data
Table 4: Summary of Groundwater Analytical Data - Chemicals of Concern
Table 5: Summary of Groundwater Analytical Data - Eight Oxygenates

Figures

Figure 1: Site Locus
Figure 2: Site Map
Figure 3: Soil Quality Map
Figure 4A: Groundwater Quality Map - Field Screening Map
Figure 4B: Groundwater Quality Map
Figure 4C: Groundwater Quality Map - 8 Oxygenates
Figure 5: Groundwater Elevation Map
Figure 6A: Cross Section Location Map
Figure 6B: Cross Section A-A'
Figure 6C: Cross Section B-B'

Appendices

Appendix A: Site Survey
Appendix B: Sampling Logs and Laboratory Reports
Appendix C: Tax Map Information
Appendix D: Boring Logs
Appendix E: Well Construction Records
Appendix F: Aquifer Evaluation Data
Appendix G: Disposal Manifest
Appendix H: Local Zoning Regulations
Appendix I: Fate & Transport Modeling Data
Appendix J: Access Agreements
Appendix K: Data Verification Checklist

1. INTRODUCTION

1.1. Owner/Operator Information

Name: Rhodes Oil Company Inc.
Address: PO Box 1545 Walterboro, South Carolina 29488-1545
Telephone Number: 843-549-5521

1.2. Property Owner Information

Name: Rhodes Oil Company Inc.
Address: PO Box 1545 Walterboro, South Carolina 29488-1545
Telephone Number: 843-549-5521

1.3. Contractor Information

Name: Environmental Compliance Services, Inc.
Address: P.O. Box 3528, Fort Mill, SC 29708
Telephone Number: (800) 627-0493
Certification Number: 358

1.4. Site Information (UST No. 02567)

Name: Rhodesway North
Address: 1400 Jefferies Highway, Walterboro, South Carolina 29488

1.5. Well Driller Information

Name:	Daniel Summers, James Hess, and Mark Gettys
Company Name:	Geologic Exploration, Inc.
Address:	176 Commerce Boulevard Statesville, North Carolina 28625
Certification Number:	01430, 01929, and 01086

1.6. Certified Laboratory Information

Company Name:	Pace Analytical Services, Inc.
Address:	9800 Kincey Avenue, Suite 100 Huntersville, North Carolina 28078
SC Certification:	99006001
Company Name:	Pace Analytical Services, Inc.
Address:	2225 Riverside Drive Asheville, North Carolina 28804
SC Certification:	99030001
Company Name:	Shield Engineering, Inc.
Address:	4301 Taggart Creek Road Charlotte, North Carolina 28208
Certification:	AASHTO

1.7. Site History

Description of Adjacent Land Use: Commercial
Predicted Future Land Use: Commercial

Date Release Reported to SCDHEC: April 14, 2011
Estimated Quantity of Product Released: Unknown
Cause of Release: Unknown

Other releases at this site? Yes (No)
If yes, date release reported to SCDHEC:

UST #	Size	Product	Date Installed	Currently in Use	Date Closed
1	12,000	Diesel Premium	Unknown	Yes	Not applicable
2	12,000	Diesel	Unknown	Yes	Not applicable
3	12,000	Regular Unleaded Gasoline	Unknown	Yes	Not applicable
4	12,000	Unleaded Plus Gasoline	Unknown	Yes	Not applicable
5	12,000	Premium Unleaded Gasoline	Unknown	Yes	Not applicable

2. Receptor Survey & Site Data

2.1. Site Geography

The site is located at the intersection of N. Jefferies Highway (US Highway 15) and Robertson Blvd in the city of Walterboro, SC. The area surrounding the site was primarily developed with commercial properties. The surrounding properties include Walker Accounting & Tax Services to the north; Dollar General to the east; Walgreen's to the south across Robertson Boulevard; South Carolina Bank & Trust across the intersection; and, CVS to the west across N. Jefferies Hwy. The topography of the area around the site was generally characterized by gently rolling features. A site location map was included as **Figure 1**.

Mean Elevation of Site: Approximately 79 feet above National Geodetic Vertical Datum (NGVD).

Additional Comments: N/A

2.2. Exposure Analysis

Describe all potential receptors and preferred pathways within a 1,000-foot radius of the site.

Description of Receptor	Distance/Direction from Site
Active Water Supply Well (WSW-1)	Approximately 300 ft North of the USTs
Mapped Wetlands	Within 275 ft of the site to the North East
Tributary to Ireland Creek	Within 300 ft of the site to the North East

Additional Comments: The total well depth or age of WSW-1 is unknown as the owner did not have the information to provide. WSW-1 is an active potable well for the Walker Accounting property.

2.3. Utilities Survey

List the utilities on-site, and adjacent to the site within a 250-foot radius, that could serve as exposure points or ingestion pathways.

Utility	On-site or Distance/Direction from Site	Depth to Utility
Water Line	On-site, northwest corner of property	Less than 5 feet
Fiber Optic Line	On-site, northwest portion of property	Less than 5 feet
Sewer Lines	On-site, northwest portion of property	Less than 5 feet
Overhead Electrical Line	On-site, northern, southern and western portions of the property	Overhead

Additional Comments: N/A

2.4. Site Geology

Provide a brief description of the regional geology and hydrogeology.

The site is located in the Coastal Plain region of South Carolina. According to Newcombe (1989), near surface sediments consist of Pliocene- to Holocene-age undifferentiated sand, silt and clay of alluvial origin, representing terrace deposits of relict shorelines. The study area lies within the floodplain of the Ashepoo, Combahee and Edisto Rivers. The depositional setting of the area has been termed "transitional" from the alluvial, upper deltaic plain to the northwest, to the proximal marine and marine environments to the southeast. In this portion of the Coastal Plain, surficial sediments range in thickness from less than 50 to approximately 400 feet. Underlying the surficial sediments is the Cooper Formation, an equivalent to the upper portions of the Floridan Aquifer (Ocala Limestone), which is an important source of groundwater in the eastern Coastal Plain. The limestone overlies the Black Mingo Formation, a Paleocene-age limestone mixed with sub-equal portions of sand and clay. The Black Mingo Formation is also used for public water supply wells where it is found with the Floridan equivalents. Below the Black Mingo Formation are the Cretaceous aquifers. In the study area, these units are, in ascending order, the Cape Fear Formation, the Middendorf Formation and the Black Creek Formation. All three water-bearing units are semi-confined in the region, with the Black Creek Formation being the principal groundwater source for the study area. These Cretaceous units range in thickness from 500 feet to over 1,000 feet, and lie unconformably over pre-Cretaceous crystalline bedrock.

The Pliocene- to Holocene-age undifferentiated sands, silts and clays comprise the surficial aquifer in central Colleton County. These units are minor sources of water for agricultural and residential irrigation but generally do not supply potable water for domestic use. The Black Mingo and Cooper Formations, and to a lesser extent the Cretaceous aquifers, are the main sources of drinking water for the region. Recharge of the upper water-bearing unit, the Ocala Limestone, occurs from rainfall and surface runoff in areas where it outcrops. The lower Cretaceous units are recharged in their respective outcrop areas located to the northwest. In the study area, the base of freshwater has been estimated at 2,000 feet below sea level.

Provide a brief description of the site specific geology and stratigraphy.

The surface material at the site was primarily asphalt and smaller areas of concrete at the canopy and store building. The asphalt/concrete and gravel base material was approximately 1-foot in thickness. Native soils observed below the thin layer of fill material at the site were generally characterized as tan/brown/clayey sand and sandy clay to depths ranging between 5 feet and 10 feet below ground surface. Below the sandy clay, the site was underlain by sand to the termination depths of 12 to 14 feet bgs.

Two soil samples collected from the screened intervals of 02567-MW-7 and 02567-TW-2 and submitted for grain size and hydrometer analyses. The soil from MW-7 was collected at a depth of 10 feet and the soil from TW-2 was collected at 35 feet below grade. Results for the shallow monitoring well MW-7 reported the presence of 0.3% gravel, 82.8% sand, 4.8% silt, and 12.1% clay. Results for the deep monitoring well TW-2 reported the presence of 0.0% gravel, 95.1% sand, 1.3% silt and 3.6% clay. Based on this information the subsurface can be classified as sandy soil.

The depths to groundwater in monitoring wells at the site ranged from 1.28 feet (02567-MW-19) to 5.09 feet (02567-MW-17). The groundwater elevation in monitoring wells at the site ranged from 62.82 feet (02567-MW-4) to 5.09 feet (02567-MW-17) relative to 79 feet above the NGVD.

3. Groundwater & Soil Assessment

3.1. Groundwater Field Screening

On March 25, 2013, Environmental Compliance Services was onsite to perform field screening activities. The field screening locations and depths were proposed in the Tier II Plan and QAPP. Locations were slightly modified in the field based on underground and overhead utilities, as well as other access restrictions. Borehole depths were based on depths to groundwater, lithology, and field screening measurements. A total of 16 shallow (FS) and four vertical (VFS) field screening points were installed throughout the site and groundwater samples were collected for benzene, toluene, ethylbenzene, total xylenes (BTEX), 1,2 DCA, and oxygenates analysis by EPA Method 8260, EDB by EPA Method 8011 and total lead by EPA 6010.

The field screening points were installed by direct push method using a Geoprobe® to the desired depth prior to sample collection. The Geoprobe® rods were decontaminated prior to installation at each new field screening point. Groundwater samples were collected at the termination depth of the field screening points using a peristaltic pump and new, unused tubing lowered to the depth of the decontaminated exposed stainless steel screen in the subsurface.

Chemicals of concern (CoC) were reported to exceed the RBSLs in FS-1, FS-2, FS-3, FS-4, FS-5, FS-6 and VFS-1 collected during the Tier II activities. The shallow field screening point samples were collected at depths ranging from 5 to 10 feet below grade. The vertical field screening points were collected at a depth of 20 ft below grade. Lead was also reported to be above the RBSL, but this may be attributed to sediment caught in the sample and subsequently picked up by the laboratory analytical devices.

Table 1 and **Figure 4A** detail the analytical results from the field screening event in March 2013.

Based on the laboratory analytical data from the field screening points chemicals of concern appeared to be defined in the horizontal vertical directions. The field screening data and proposed monitoring well locations were forwarded to the SCDHEC for review and comment. Following the SCDHEC's review and comments, field screening activities were deemed complete and additional access agreements were sought after for monitoring well installation.

3.2. Soil Sampling

3.2.1. Soil Analytical Data – Monitoring Wells

During monitoring well installation from April 8, 2013 through April 29, 2013 a total of 24 soil samples were collected. The depths of the soil samples ranged from 2 feet to 4 feet below grade during well installation. Soil samples were collected above the water table from each shallow monitoring well and each telescoping well exhibiting the highest PID measurement, or greatest depth if no detection, and submitted for laboratory analyses for benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX compounds) and naphthalene by EPA Method 8260. Soil samples were collected using disposable nitrile gloves, containerized in laboratory-prepared glass bottles, packed on ice, and transported to Pace Analytical Services, Inc. (Huntersville, NC), a South Carolina certified laboratory.

Analytical results for 02567-MW-5, 02567-MW-6, 02567-MW-9, 02567-MW-10, 02567-MW-10, 02567-MW-11, 02567-MW-12, 02567-MW-13, 02567-MW-17, 02567-TW-1, 02567-TW-2,

02567-RW-1, and 02567-RW-3 were reported to contain one or more chemicals of concern above their respective RBSL's for sandy soil. A summary of Soil Analytical Data has been included with this report as **Table 2**. A map detailing the soil analytical data has been included as **Figure 3**.

Additionally, two soil samples collected from the screened intervals of 02567-MW-7 and 02567-TW-2 and submitted for grain size and hydrometer analyses. The soil from MW-7 was collected at a depth of 10 feet and the soil from TW-2 was collected at 35 feet below grade. Results for the shallow monitoring well MW-7 reported the presence of 0.3% gravel, 82.8% sand, 4.8% silt, and 12.1% clay. Results for the deep monitoring well TW-2 reported the presence of 0.0% gravel, 95.1% sand, 1.3% silt and 3.6% clay. Based on this information the subsurface can be classified as sandy soil.

3.3. Monitoring Well Locations

The initial set of monitoring wells was installed based on the field screening groundwater analytical data. During groundwater sample collection it was discovered that well 02567-MW-12 contained a measurable free product thickness of 0.87 ft. Subsequent to that discovery it was determined that additional wells would be required to delineate the free product plume. Monitoring wells 02567-MW-17 and 02567-MW-20 were installed to help delineate the product. Wells 02567-MW-6, 02567-RW-2, 02567-RW-3, and 02567-MW-5 also assisted in delineating the product plume. Based on the results from the most recent gauging and sampling event free product has only been measured in 02567-MW-1, 02567-MW-12, and 02567-MW-17. Monitoring wells 02567-MW-3, 02567-MW-4, 02567-MW-18, 02567-MW-19, 02567-MW-21, and 02567-MW-22 were installed to delineate the contaminant plume. Site well locations are presented in **Figure 2**.

3.4. Monitoring Well Installation

From April 8, 2013 through April 29, 2013 Environmental Compliance Services and its contractor Geologic Exploration Services (GEX) performed the installation of 19 shallow monitoring wells, two deep telescoping wells, and three 4-inch recovery wells.

Shallow monitoring wells 02567-MW-4 through 02567-MW-22 were installed to depths ranging from 5 feet to 13 feet below grade. Monitoring wells 02567-MW-14 through 02567-MW-16 were installed by hand within the heavily wooded swampy area located to the northeast of the Rhodesway North property. Due to shall refusal in the swampy area, monitoring wells 02567-MW-14, 02567-MW-15, and 02567-MW-16 were installed to depths of 5 feet, 8 feet, and 8 feet, respectively. Each shallow monitoring well was constructed with a 2-inch schedule 40 PVC riser and well screen with 0.010-inch slots. The wells were each completed with flush-mounted traffic bearing well covers. Following installation, each monitoring well was developed using a decontaminated submersible pump between each well until the groundwater appeared sediment free.

Two deep telescoping wells (02567-TW-1 and 02567-TW-2) were installed to a depth of 35 feet below grade. Both wells were installed with a 6-inch outer casing drilled to 27 feet below grade.

Three recovery wells (02567-RW-1 through 02567-RW-3) were installed to a depth of 13 feet below grade. Each well was installed with a 4 inch diameter casing.

Monitoring well boring logs have been included in **Appendix D** and the Well Construction Records have been included in **Appendix E**.

3.5. Monitoring Well Gauging

Twenty-seven monitoring wells (02567-MW-1 through 02567-MW-22, 02567-TW-1, 02567-TW-2 and 02567-RW-1 through 02567-RW-3) were gauged for depths to product, depths to groundwater and total well depths on August 16, 2013 and April 30, 2013. Free product was encountered in monitoring wells 02567-MW-1, 02567-MW-12 and 02567-MW-17 with measured thicknesses of 0.36 ft, 0.87 ft and 1.21 ft, respectively. The remaining wells on and offsite were not noted to contain free product.

The groundwater elevations in the shallow monitoring wells, relative to a temporary benchmark with an assumed datum of 79 feet above mean sea level, ranged from 62.82 feet (02567-MW-17) to 76.10 feet (02567-MW-3). The groundwater elevations in the deep monitoring wells, relative to a temporary benchmark with an assumed datum of 79 feet above mean sea level was 73.97 feet for TW-1 and TW-2.

Based on these data, the groundwater flow direction was generally toward the northeast. The average horizontal hydraulic gradient was approximately 0.036 ft/ft throughout the site. The hydraulic gradient was estimated based on the change in head hydraulic head per unit distance, calculated by using the formula $i = \frac{h_2 - h_1}{d}$, referenced from the "EPA On-line Tools for Site Assessment Calculation" website <http://www.epa.gov/athens/learn2model/part-two/onsite/gradient.htm>. In this calculation, i is the gradient, h is the hydraulic head at the up gradient monitoring well (h_1) and down gradient monitoring well (h_2), and d is the distance between the down gradient monitoring well and the up gradient monitoring well.

The vertical hydraulic gradient between 02567-MW-5 and 02567-TW-1 was calculated as 0.1543 ft/ft in the downward direction. The vertical hydraulic gradient between 02567-MW-7 and 02567-TW-2 was calculated as 0.02615 ft/ft in the upward direction.

Historical Groundwater Elevation Data is presented in **Table 3**. A Groundwater Elevation Map based on the April 2013 data has been included as **Figure 5**.

3.6. Bail Down Test

On April 16, 2013 a bail down test was performed at the request of SCDHEC on monitoring well 02567-MW-1. The bail down started at 1315 with initial depth to product and depth to water measurements of 4.55 feet and 5.21 feet, respectively. Depths to product and water were measured every 10 minutes until 1430 from the initial bail down. The volume of product removed from 02567-MW-1 at 1315 was measured using a 1000 mL graduated cylinder and recorded as 490 mL (0.129 gal) of free product. The product was placed in a drum to be properly disposed.

The results of the bail down test showed that after the initial volume of free product was removed approximately half of the volume returned 50 minutes later. The depth to water had stabilized approximately 40 minutes after initial free product removal. According to the graph presented in **Appendix F** the measured true thickness of the mobile free product was calculated to be 0.09 ft.

The true thickness is calculated as the distance from the inflection point on the graph (0.23 ft at time = 13:40) to the top of the free product under static conditions (0.32 ft at time = 14:30).

3.7. Groundwater Sampling

Groundwater samples were collected on April 17, 2013 and April 30, 2013. Each monitoring well was purged prior to sample collection using a clean, disposable polyethylene bailer while wearing new disposable nitrile gloves. Purging was accomplished by removing three to five well volumes and in-field groundwater quality parameters were stabilized or until the well was bailed dry and allowed to recharge. Groundwater samples collected were containerized in laboratory-prepared glass bottles and plastic containers, packed on ice, and transported to Pace Analytical Services, Inc. (Huntersville, NC), a South Carolina certified laboratory. Standard chain-of-custody procedures were maintained, as documented in **Appendix B**.

Thirty-six water samples (27 monitoring wells, 2 surface water, 2 duplicate, 2 field blanks, and 3 trip blanks) were analyzed for benzene, toluene, ethylbenzene, and total xylenes (collectively referred to as BTEX compounds), naphthalene, 1,2-dichloroethane (1,2-DCA), methyl tert-butyl ether (MTBE), tert-amyl alcohol (TAA), tert-amyl methyl ether (TAME), tert-butyl alcohol (TBA), tert-butyl formate (TBF), diisopropyl ether (DIPE), ethanol, ethyl tert-butyl ether (ETBE), and 3,3-dimethyl-1-butanol by EPA Method 8260, Total Lead by EPA Method 6010 and EDB by EPA Method 8011.

A duplicate sample identified as Duplicate-1 was collected from 02567-MW-5 within 5 minutes of 02567-MW-5 groundwater sample collection. A duplicate sample identified as Duplicate-2 was collected from 02567-MW-20 within 5 minutes of 02567-MW-20 groundwater sample collection. Duplicate samples were assigned a unique identification name with no time listed on the chain of custody to avoid potential laboratory analytical bias. Duplicate samples were identified in the field book. Two field blanks were also collected, one each day, during water sampling activities for quality assurance and quality control. Three trip blanks, one set for each cooler, were included for quality assurance and quality control.

3.8. Groundwater Analytical Results

Analytical results for the installed monitoring wells reported that chemicals of concern were reported above their respective RBSL's for monitoring wells 02567-MW-2, 02567-MW-5, 02567-MW-6, 02567-MW-7, 02567-MW-8, 02567-MW-9, 02567-MW-10, 02567-MW-11, 02567-MW-13, 02567-RW-1, 02567-RW-2, and 02567-RW-3. Results for Total Lead were also reported above the RBSL for several monitoring wells. It is suspected that the high concentrations of lead is due to the presence of fine sand particles reacting with the preservatives in the sample bottles and not a representation of the true presence of lead contamination.

Action levels for Tertiary Amyl Alcohol, Tertiary Butyl Alcohol were exceeded in the monitoring wells 02567-MW-6, 02567-MW-7, 02567-MW-8, 02567-MW-9 (also including Tertiary Amyl Methyl Ether), 02567-MW-10, 02567-MW-11, 02567-MW-13, 02567-MW-16, 02567-RW-1, 02567-RW-2, and 02567-RW-3.

Historical groundwater analytical data for chemicals of concern and 8 Oxygenates are presented in **Tables 4** and **5**. A groundwater quality map based on the April 2013 data is included as **Figures 4B** and **4C**. The estimated vertical extent of total CoC (sum of BTEX, MTBE, and naphthalene concentrations) in groundwater are shown on Cross Section A - A' and Cross Section

B - B' as **Figures 6B** and **6C**, respectively. The laboratory reports for groundwater samples collected during this assessment are included in **Appendix B**. Groundwater Sampling Field Data Sheets have been included in **Appendix B**.

3.9. Slug Test Data

Three slug tests (i.e., rising head) were performed on April 19, 2013, one in shallow monitoring well 02567-MW-7 and two in telescoping wells 02567-TW-1 and 02567-TW-2. Slug test data was collected using an In-Situ (100 psi) Level TROLL 700. Data was downloaded for interpretation using Super Slug software. The hydraulic conductivity estimated for the aquifer surrounding shallow monitoring well 02567-MW-7, calculated using the Bouwer and Rice method, was 0.1802 ft/day. The hydraulic conductivity estimated for the aquifer surrounding telescoping well 02567-TW-1, again using the Bouwer and Rice method, was 0.1632 ft/day. The hydraulic conductivity estimated for the aquifer surrounding telescoping well 02567-TW-2, again using the Bouwer and Rice method, was 0.3193 ft/day. Seepage velocity represents the apparent velocity of groundwater through the bulk of a porous medium. The horizontal seepage velocity was calculated using Darcy's Law ($V = \frac{Ki}{n_e}$) where V is the average linear flow, K is the hydraulic conductivity, i is the hydraulic gradient, n_e is the effective porosity. The estimated seepage velocity in monitoring well 02567-MW-7 was 10.29 ft/yr based on the horizontal hydraulic gradient of 0.036 ft/ft. The estimated seepage velocities in telescoping wells 02567-TW-1 and 02567-TW-2 were 9.32 ft/yr, and 18.24 ft/yr, respectively. Results of slug tests performed on April 19, 2013 are presented in **Appendix F**. Calculations and raw data from the slug tests conducted in monitoring wells 02567-MW-7, 02567-TW-1 and 02567-TW-2 have been included as **Appendix F**.

Aquifer Characteristics: **Unconfined**

Hydraulic Conductivity: 0.1802 ft/day (02567-MW-7), 0.1632 ft/day (02567-TW-1) and 0.3193 ft/day (02567-TW-2)
Hydraulic Gradient: 0.036 ft/ft northeast
Effective Porosity: 23%
Estimated Seepage Velocity: 10.29 ft/yr (02567-MW-7), 9.32 ft/yr (02567-TW-1) and 18.24 ft/yr (02567-TW-2)

3.10. Investigative derived waste

Investigative derived waste (IDW) generated during these activities was placed in 55-gallon drums for disposal by a licensed facility. A copy of the disposal manifest for 10.22 tons of soils and drilling mud from drilling activities, 345 gallons of water from decontamination of equipment, well development, and purge water has been included in **Appendix G**.

4. Results & Discussion

4.1. Conclusions

- With the exception of the Dollar General Store property, access to the properties east of the site was denied for field screening and monitoring well installation. The field screening locations were confined to onsite points and monitoring wells were limited to the abutting north and east properties.
- Groundwater samples collected and analyzed during field screening activities indicated chemicals of concern in groundwater were defined in the horizontal and vertical directions.
- Following field screening activities on March 2013, 22 shallow monitoring wells, two telescoping wells and three recovery wells were installed to delineate the extent of free product and chemicals of concern in soil and groundwater.
- Soil samples were collected and analyzed during well installations and laboratory results indicated the presence of chemicals of concern were present in soil from 02567-MW-5, 02567-MW-6, 02567-MW-9, 02567-MW-10, 02567-MW-11, 02567-MW-12, 02567-MW-13, 02567-MW-17, 02567-TW-1, 02567-TW-2, 02567-RW-1, 02567-RW-2, and 02567-RW-3. These samples were collected at a depths ranging from 2 to 4 feet below grade.
- The distribution of petroleum hydrocarbons in soil appear defined based on these analytical data.
- Free product was detected in site monitoring wells 02567-MW-1, 02567-MW-12 and 02567-MW-17 during this assessment at thicknesses of 0.36 ft, 0.87 ft, and 1.21 ft respectively. Monitoring wells 02567-MW-5, 02567-MW-6, and 02567-MW-20 as well as 02567-RW-2 and 02567-RW-3 were used as product delineating wells.
- A free product bail down test was performed on 02567-MW-1 which resulted in a calculated product thickness of 0.23 ft.
- Based on the April 2013 groundwater level measurements, groundwater flow was generally toward the northeast beneath the site.
- Analytical results for the installed monitoring wells reported that chemicals of concern were reported above their respective RBSL's for monitoring wells 02567-MW-2, 02567-MW-5, 02567-MW-6, 02567-MW-7, 02567-MW-8, 02567-MW-9, 02567-MW-10, 02567-MW-11, 02567-MW-13, 02567-RW-1, 02567-RW-2, and 02567-RW-3. These monitoring wells are located immediately adjacent to the gasoline/diesel dispenser islands near 02567-MW-1.
- Concentrations of total lead were reported above the RBSL in groundwater samples collected from a majority of the site monitoring wells. Lead, however, is a naturally occurring metal in the subsurface, and with the relatively high turbidity measurements recorded during the groundwater sampling event, detections of total lead may be more representative of the sediment.
- The distribution of CoC in groundwater from the site appears defined in the horizontal and vertical directions based on the April 2013 analytical data.

4.2. Recommendations

- AFVR's should be performed on monitoring wells 02567-MW-1, 02567-MW-9, 02567-MW-11, 02567-MW-12, 02567-MW-17, 02567-RW-1, 02567-RW-2, and 02567-RW-3 to reduce the presence of free product as well as reduce dissolved phased petroleum hydrocarbon contamination within the aquifer.
- Additional groundwater monitoring should be performed to establish distribution trends and natural attenuation parameters, if monitored natural attenuation should be considered.
- ECS presumes the SCDHEC will complete the fate and transport simulation to determine the feasibility of site remediation by natural attenuation. ECS would be interested in learning of the exposure points and points of compliance used in the simulation and the Site Specific Target Level (SSTL) established for this site.

TABLES

Table 1
Summary of Analytical Results - Field Screening Water Samples

Analytical Method			EPA 8260							EPA 8011	EPA 6010 by	EPA 8260							
Sample ID	**Constituent of Concern**		Benzene	Toluene	Ethylbenzene	Total Xylenes	Methyl-tert-butyl ether	Naphthalene	1,2-Dichloroethane	1,2-Dibromoethane (EDB)	Lead	tert-Amylmethyl ether	Ethyl-tert-butyl ether	3,3-Dimethyl-1-Butanol	Diisopropyl ether	Ethanol	tert-Amyl Alcohol	tert-Butyl Alcohol	tert-Butyl Formate
	Date Collected (mm/dd/yy)	Sample Depth (ft. BGS)	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
02567-FS1	03/25/2013	8	**1,950**	1,570	**4,790**	**18,870**	<1000	1,330	<1000	<0.020	**1,350**	<2000	<2000	<20000	<1000	<40000	<20000	<20000	<10000
02567-FS2	03/25/2013	8	**6.9**	1.7 J	<5.0	<15.0	<5.0	<5.0	<5.0	<0.021	**1,160**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS3	03/25/2013	10	**15,900**	**23,600**	**2,490**	**12,320**	**781**	**962**	<50.0	<0.019	**424**	<100	<100	<1000	<50.0	<2000	**1,500**	1,200	<500
02567-FS4	03/25/2013	10	**30.3**	<5.0	<5.0	<15.0	**786**	<5.0	<5.0	<0.020	**124**	<10.0	<10.0	<100	<5.0	<200	**385**	326	<50.0
02567-FS5	03/25/2013	10	**101**	3.2 J	<5.0	<15.0	**1,430**	<5.0	<5.0	<0.020	**463**	<10.0	<10.0	<100	<5.0	<200	**373**	821	<50.0
02567-FS6	03/25/2013	10	**5.4**	1.9 J	<5.0	<15.0	15.8	2.5 J	<5.0	<0.022	**8,190**	<10.0	<10.0	<100	<5.0	<200	116	1,360	<50.0
02567-FS7	03/25/2013	10	<5.0	<5.0	2.2 J	8.3J	<5.0	<5.0	<5.0	<0.027	**6,860**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS8	03/25/2013	10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.022	**429**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS9	03/26/2013	10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	**691**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS10	03/26/2013	5	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.023	**2,130**	<10.0	<10.0	<100	<5.0	<200	<100	365	<50.0
02567-FS11	03/26/2013	5	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	**2,240**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS12	03/26/2013	5	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.021	**7,030**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS13	03/26/2013	10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	**676**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS14	03/26/2013	10	<5.0	2.5 J	<5.0	3.7 J	<5.0	2.2 J	<5.0	<0.020	**899**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS15	03/26/2013	10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	**534**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-FS16	03/26/2013	10	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.021	**588**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-VFS1	03/25/2013	18	**78.1**	78.3	313	**1,083**	7.3	**106**	<5.0	<0.020	**191**	<10.0	<10.0	<100	<5.0	<200	<100	67.1 J	<50.0
02567-VFS2	03/25/2013	20	4.9 J	<5.0	<5.0	<15.0	25.5	<5.0	<5.0	<0.021	**394**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-VFS3	03/26/2013	20	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.020	**414**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-VFS4	03/26/2013	20	<5.0	<5.0	<5.0	<15.0	<5.0	<5.0	<5.0	<0.019	**296**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
South Carolina RBSL for Groundwater			**5**	**1,000**	**700**	**10,000**	**40**	**25**	**5**	**0.05**	**15**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
South Carolina Action Levels for Groundwater			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	**128**	**47**	--	**150**	**10,000**	**240**	**1,400**	--

NOTES:
ND = Not Detected
ft. BGS = feet below ground
mg/L = milligrams per liter
ug/L = micrograms per liter
Bold data above the RBSL

TABLE 2
SUMMARY OF SOIL ANALYTICAL DATA
CHEMICALS OF CONCERN[1]
RHODESWAY NORTH

Well ID	Sample Date	Benzene (µg/kg)	Toluene (µg/kg)	Ethyl-benzene (µg/kg)	Total Xylenes (µg/kg)	MTBE (µg/kg)	Naph-thalene (µg/kg)
02567-MW4-4	4/16/2013	<3.6	<3.6	5.6	<10.9	<3.6	<3.6
02567-MW5-4	4/16/2013	**336**	<297	605	1,892	<297	<297
02567-MW6-4	4/16/2013	**90.5**	7.8	26.9	160	30	8.9
02567-MW7-4	4/16/2013	<4.8	<4.8	<4.8	<14.5	<4.8	<4.8
02567-MW8-4	4/16/2013	<4.3	<4.3	<4.3	<12.9	<4.3	<4.3
02567-MW9-4	4/16/2013	**3,410**	**16,200**	**5,130**	**30,890**	19,100	**4,900**
02567-MW10-4	4/16/2013	**28.9**	<4.7	<4.7	<14.5	364	7.0
02567-MW11-4	4/16/2013	**686**	15.7	106	304	2,500	8.7
02567-MW12-4	4/16/2013	**614**	785	<248	889	3,320	<248
02567-MW13-4	4/16/2013	**355**	<247	1,730	<742	<247	**1,840**
02567-MW14-2	4/16/2013	<6.0	<6.0	<6.0	<18.0	<6.0	<6.0
02567-MW15-2	4/16/2013	<5.9	<5.9	<5.9	<17.6	<5.9	<5.9
02567-MW16-2	4/16/2013	<4.9	<4.9	<4.9	<14.6	<4.9	<4.9
02567-MW17-4	4/16/2013	**2,070**	**4,150**	771	4,290	8,120	**762**
02567-MW18-3	4/29/2013	<5.1	<5.1	<5.1	<15.2	<5.1	<5.1
02567-MW19-3	4/29/2013	<4.9	<4.9	<4.9	<14.6	<4.9	<4.9
02567-MW20-4	4/29/2013	<5.0	<5.0	<5.0	<15.0	70.5	<5.0
02567-MW21-4	4/29/2013	<3.8	<3.8	<3.8	<11.4	<3.8	<3.8
02567-MW22-4	4/29/2013	<4.5	<4.5	<4.5	<13.9	<4.5	<4.5
02567-TW1-4	4/16/2013	**2,320**	**16,500**	**5,670**	**30,940**	3,960	**2,160**
02567-TW2-4	4/16/2013	**1,660**	**4,950**	**1,330**	7,500	5,270	**1,270**
02567-RW-1-4	4/16/2013	**417**	<128	**424**	**695**	1,410	**281**
02567-RW-2-4	4/16/2013	<4.3	<4.3	<4.3	20	49.3	<4.3
02567-RW-3-4	4/16/2013	**7.6**	15.3	6.0	27	74.5	<5.0
RBSL (sandy soil)		**7**	**1,450**	**1,150**	**14,500**	--	**36**

Notes:
1. Analyses for volatile organics by Method 8260B
2. Concentrations in bold face type exceeded the RBSLs.
3. Less that the method detection limit specified in the laboratory report.
3. May 2001 Risk-Based Screening Levels.

TABLE 3
SUMMARY OF GROUNDWATER ELEVATION DATA[1]
RHODESWAY NORTH

Well	Date	Top of Casing Elevation (ft.)	Depth to Water (ft.)	Depth to Product (ft.)	Free Product Thickness (ft.)	Ground-water Elevation (ft.)	Well Depth (ft)	Screened Interval (ft.)
02567-MW1	4/17/2012	78.57	5.50	---	---	73.07	13.50	3-13
	4/16/2013		4.91	4.55	0.36	73.93		
02567-MW2	4/17/2012	78.77	5.11	---	---	73.66	13.26	3-13
	4/16/2013		3.83	---	---	74.94		
02567-MW3	4/17/2012	80.14	5.85	---	---	74.29	13.98	3-13
	4/16/2013		4.04	---	---	76.10		
02567-MW4	4/16/2013	77.22	2.79	---	---	74.43	12.36	3-13
02567-MW5	4/16/2013	78.08	3.75	---	---	74.33	12.50	3-13
02567-MW6	4/16/2013	77.83	4.08	---	---	73.75	12.72	3-13
02567-MW7	4/16/2013	76.94	3.67	---	---	73.27	12.70	3-13
02567-MW8	4/16/2013	77.75	3.65	---	---	74.10	12.97	3-13
02567-MW9	4/16/2013	79.04	4.05	---	---	74.99	12.55	3-13
02567-MW10	4/16/2013	78.62	4.29	---	---	74.33	12.67	3-13
02567-MW11	4/16/2013	79.01	4.40	---	---	74.61	12.16	3-13
02567-MW12	4/16/2013	78.19	5.06	4.19	0.87	74.60	12.65	3-13
02567-MW13	4/16/2013	78.13	4.19	---	---	73.94	12.62	3-13
02567-MW14	4/16/2013	72.00	3.25	---	---	68.75	7.56	3-8
02567-MW15	4/16/2013	70.00	3.68	---	---	66.32	11.39	3-8
02567-MW16	4/16/2013	67.00	3.80	---	---	63.20	10.12	3-8
02567-MW17	4/16/2013	77.80	5.09	3.88	1.21	62.82	13.00	3-13
02567-MW18	4/30/2013	76.32	2.46	---	---	73.86	12.30	3-13
02567-MW19	4/30/2013	74.80	1.28	---	---	73.52	12.12	3-13
02567-MW20	4/30/2013	77.46	3.99	---	---	73.47	13.27	3-13
02567-MW21	4/30/2013	75.75	2.77	---	---	72.98	12.59	3-13
02567-MW22	4/30/2013	75.67	4.70	---	---	70.97	13.18	3-13
02567-TW1	4/16/2013	78.41	4.44	---	---	73.97	35.42	30-35
02567-TW2	4/16/2013	77.17	3.20	---	---	73.97	36.85	30-35
02567-RW-1	4/16/2013	78.77	4.49	---	---	74.28	12.94	3-13
02567-RW-2	4/16/2013	78.23	4.13	---	---	74.10	13.23	3-13
02567-RW-3	4/16/2013	78.10	4.18	---	---	73.92	13.20	3-13

Notes:

1. Elevations relative datum NAVD 88.
2. MW-14, MW-15, MW-16 are stick up wells in the Swampy/Wooded Area.

TABLE 4
SUMMARY OF GROUNDWATER ANALYTICAL DATA
CHEMICALS OF CONCERN[1]
RHODESWAY NORTH

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)
02567-MW1	4/17/2012	**5,110**[2]	**6,520**	**873J**[3]	**3,940J**	**43,200**	<2,000[4]	<2,000	<0.020	**81**
	4/17/2013	**Free Product**								
02567-MW2	4/17/2012	3.7 J	5.0 J	<5.0	<15	4.0 J	<5.0	<5.0	<0.021	**158**
	4/17/2013	**27.5**	<5.0	<5.0	<10.5	17.9	<5.0	<5.0	<0.020	<5.0
02567-MW3	4/17/2012	2.3 J	14.7	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**241**
	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0
02567-MW4	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**87.5**
02567-MW5	4/17/2013	**16.6**	23.6	37.3	175.6	<5.0	15.0	<5.0	<0.021	**533**
02567-MW6	4/17/2013	**6,110**	**4,410**	**3,080**	**7,290**	**2,140**	**716**	<5.0	<0.020	**23.7**
02567-MW7	4/17/2013	**1,010**	<50.0	<50.0	<150	**1,110**	<50.0	<50.0	<0.020	**74.2**
02567-MW8	4/17/2013	**122**	27.5	17.2	32.8	**185**	20.3	<5.0	<0.020	**114**
02567-MW9	4/17/2013	**13,600**	**16,300**	**1,600**	6,860	**70,500**	**617**	<50.0	<0.020	**88**
02567-MW10	4/17/2013	**4,280**	286	**710**	2,689	**14,500**	**207**	<100	<0.020	**23.8**
02567-MW11	4/17/2013	**19,600**	**18,000**	**2,610**	**11,600**	**16,800**	**462**	<50.0	<0.020	**56.3**
02567-MW12	4/17/2013	**Free Product**								
02567-MW13	4/17/2013	**861**	<100	410	844	**4,640**	**172**	<100	<0.019	**15.8**
02567-MW14	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**54.3**
02567-MW15	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**345**
02567-MW16	4/17/2013	<5.0	<5.0	<5.0	<15	9.1	<5.0	<5.0	<0.020	**845**
02567-MW17	4/17/2013	**Free Product**								
02567-MW18	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.021	**94.9**
02567-MW19	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.019	**30.2**
02567-MW20	4/30/2013	**324**	32.5	23.5	456.5	**3,250**	16.8	<5.0	<0.020	**156**
02567-MW21	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**122**
02567-MW22	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**64.5**
02567-TW-1	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**22.9**
02567-TW-2	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**37.8**
02567-RW-1	4/17/2013	**2,900**	**3,030**	573	2,632	**8,200**	<250	<250	<0.020	**82.1**
02567-RW-2	4/17/2013	**962**	334	200	815	**1,260**	**68**	<50.0	<0.020	**30.9**
02567-RW-3	4/17/2013	**2,740**	**2,920**	**963**	4,179	**13,500**	<500	<500	<0.020	**52.7**
02567-SW-1	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.4
02567-SW-2	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0
02567-WSW-1	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.2
RBSLs[6]		**5**	**1,000**	**700**	**10,000**	**40**	**25**	**5**	**0.05**	**15**

Notes:

1. Analyses for volatile organics by Method 8260; Analyses for EDB by EPA Method 8011; Analyses for Total Lead by Method 6010.
2. Concentrations in bold face type exceeded the RBSLs.
3. Estimated concentration between the laboratory reporting limit and the method detection limit.
4. Less that the method detection limit specified in the laboratory report.
5. Analysis not requested.
6. May 2001 Risk-Based Screening Levels.

TABLE 5
SUMMARY OF GROUNDWATER ANALYTICAL DATA[1]
EIGHT OXYGENATES
RHODESWAY NORTH

Well ID	Date Sampled	Tertiary Amyl Methyl Ether (TAME) (µg/L)	Ethyl tert-Butyl Ether (ETBE) (µg/L)	3,3-Dimethyl-1-butanol (µg/L)	Di-isopropyl Ether (DIPE) (µg/L)	Ethanol (µg/L)	Tertiary Amyl Alcohol (TAA) (µg/L)	Tertiary Butyl Alcohol (TBA) (µg/L)	Tertiary Butyl Formate (TBF) (µg/L)
02567-MW1	4/17/2012	<4,000[2]	<4,000	<40,000	<2,000	<80,000	**32,100J**[3]	<40,000	<20,000
	4/17/2013	**Free Product**							
02567-MW2	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	4/17/2013	<10.0	<10.0	<100	<5.0	<200	131	<100	<50.0
02567-MW3	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW4	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW5	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW6	4/17/2013	<100	<100	<1,000	<50.0	<2,000	<1,000	**1,760**	<500
02567-MW7	4/17/2013	<100	<100	<1,000	<50.0	<2,000	**2,270**	**6,060**	<500
02567-MW8	4/17/2013	<10.0	<10.0	<100	<5.0	<200	**370**	816	<50.0
02567-MW9	4/17/2013	**216**	<100	<1,000	<50.0	<2,000	**39,000**	**12,100**	<500
02567-MW10	4/17/2013	<200	<200	<2,000	<100	<4,000	**20,100**	**71,100**	<1,000
02567-MW11	4/17/2013	<100	<100	<1,000	<50.0	<2,000	**8,260**	**19,200**	<500
02567-MW12	4/17/2013	**Free Product**							
02567-MW13	4/17/2013	<200	<200	<2,000	<100	<4,000	<2,000	**4,610**	<1,000
02567-MW14	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW15	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW16	4/17/2013	<10.0	<10.0	<100	<5.0	<200	**249**	**1,730**	<50.0
02567-MW17	4/17/2013	**Free Product**							
02567-MW18	4/30/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW19	4/30/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW20	4/30/2013	12.7	<10.0	<100	<5.0	<200	**11,700**	**11,400**	<50.0
02567-MW21	4/30/2013	<10.0	<10.0	<100	<5.0	<200	167	<100	<50.0
02567-MW22	4/30/2013	<10.0	<10.0	<100	<5.0	<200	<100	128	<50.0
02567-TW1	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-TW2	4/17/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-RW1	4/17/2013	<500	<500	<5,000	<250	<10,000	**6,580**	**14,000**	<2,500
02567-RW2	4/17/2013	<100	<100	<1,000	<50.0	<2,000	**2,840**	<100	<500
02567-RW3	4/17/2013	<1,000	<1,000	<10,000	<500	<20,000	<10,000	**11,000**	<5,000
02567-SW-1	4/30/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-SW-2	4/30/2013	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
Action Level[5]		**128**	**47**	--	**150**	**10,000**	**240**	**1,400**	--

Notes:

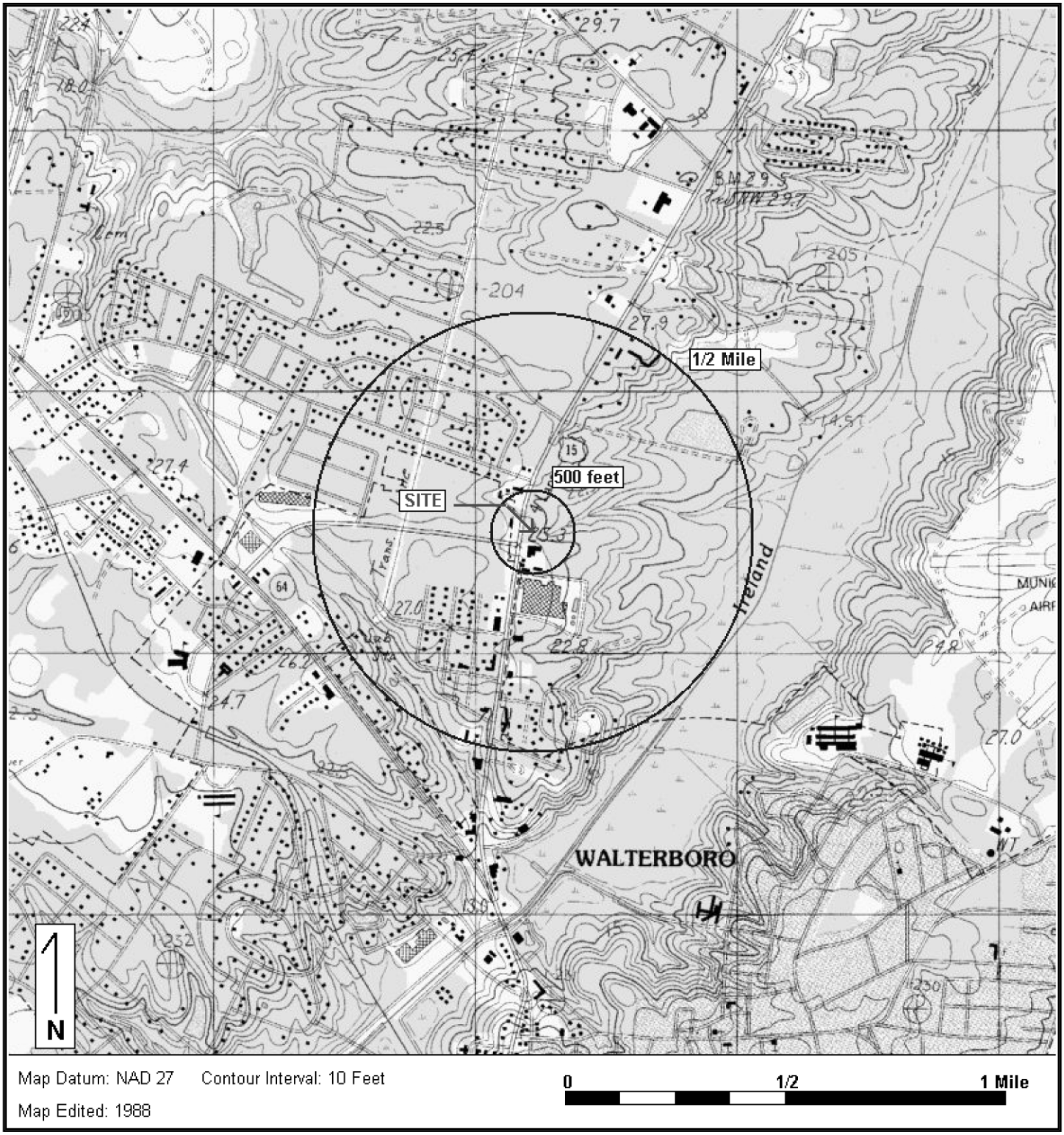
1. Analyses by Method 8260B.
2. Less than the reporting limit specified in the laboratory report.
3. J value designates an estimated value less than the laboratory reporting limit but greater than the method detection limit
4. Analysis not requested.
5. August 2008 Action Levels.

FIGURES

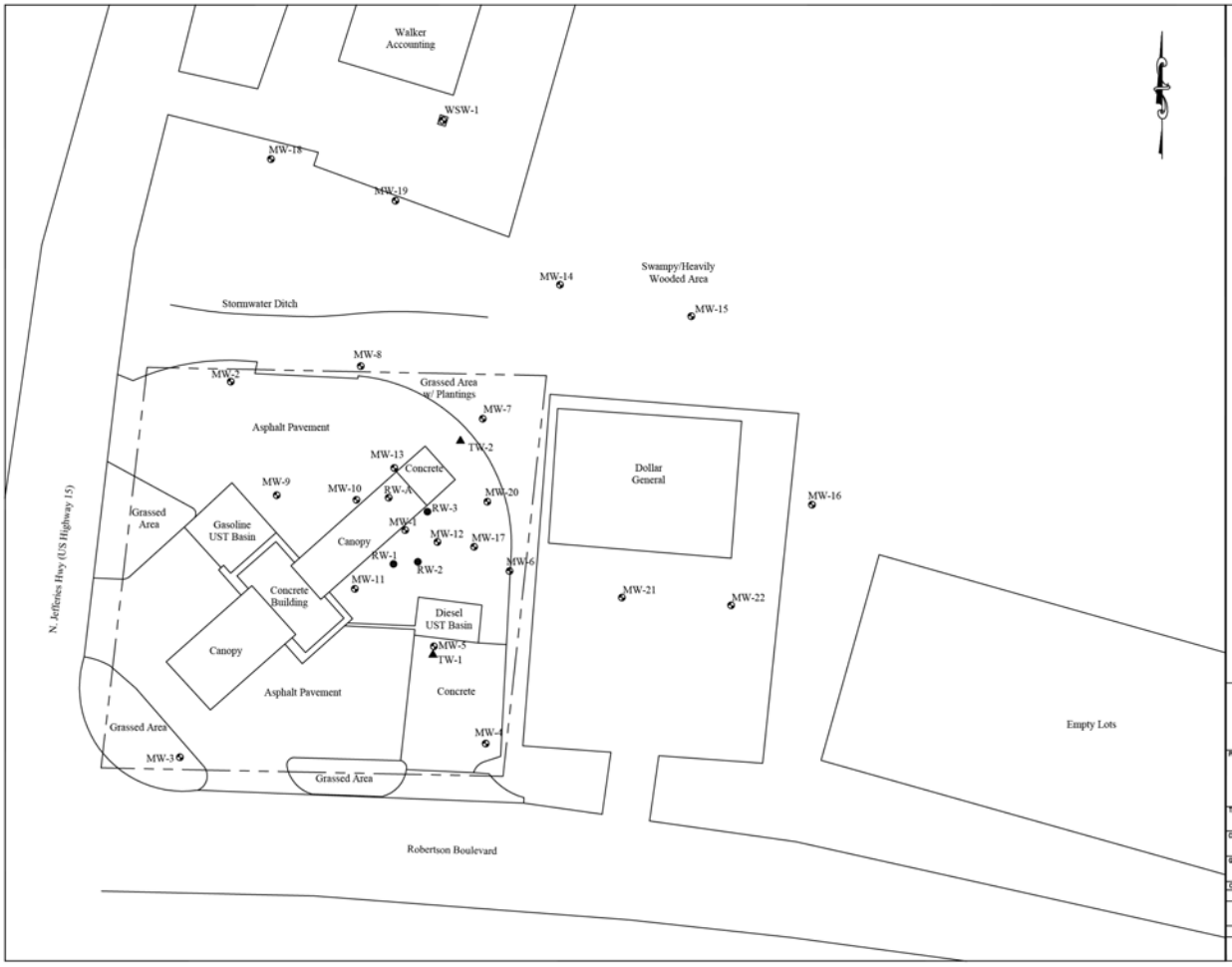
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins



Legend

▲ Telescoping Monitoring Well

Shallow Monitoring Well

ECS–1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

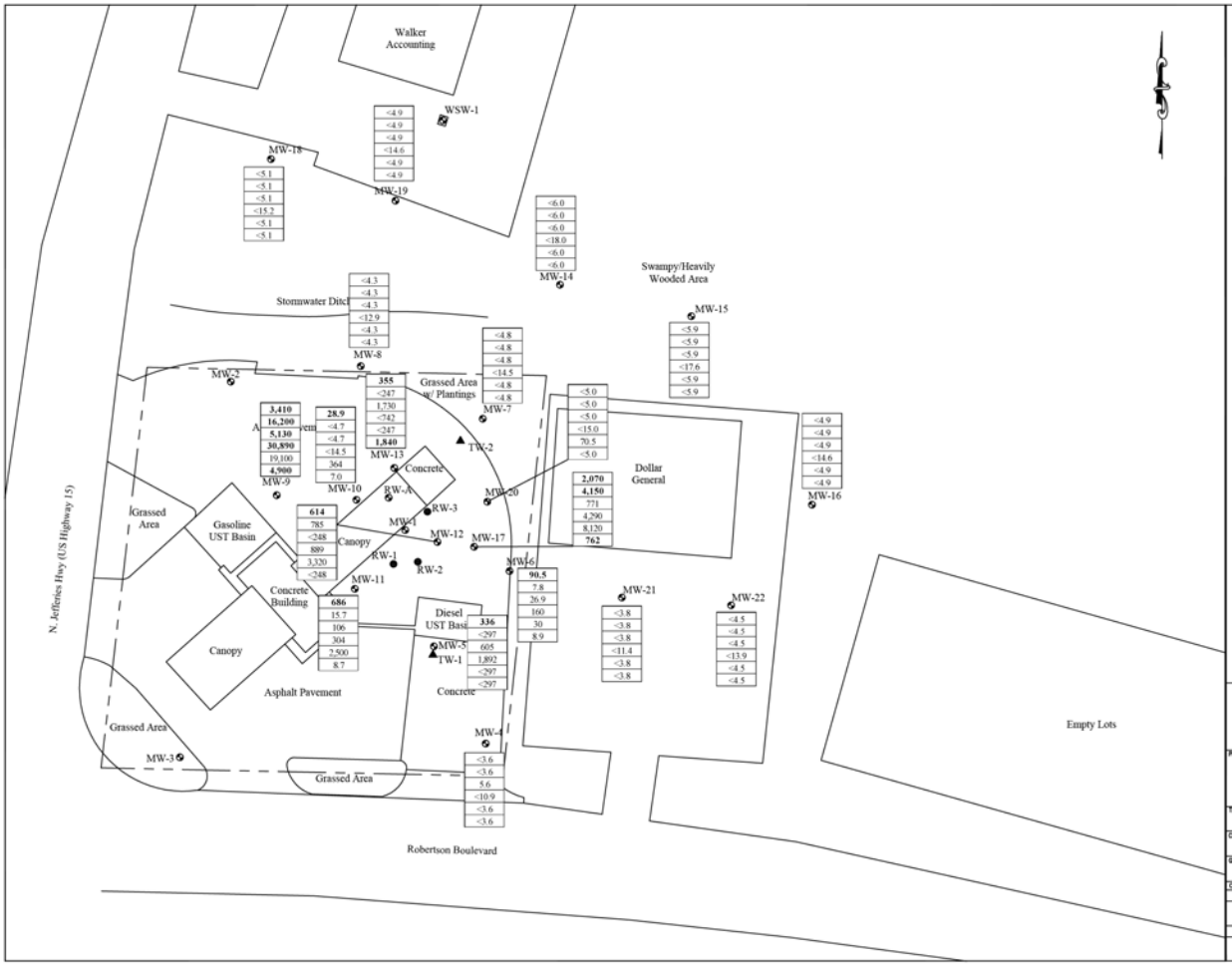
TITLE:
Site Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	4/25/13	14-215778	2



Legend

▲ Telescoping Monitoring Well
Shallow Monitoring Well
ECS–1 Well I.D.

7	Benzene (µg/kg)
1,450	Toluene (µg/kg)
1,150	Ethyl-benzene (µg/kg)
14,500	Total Xylenes (µg/kg)
--	MTBE (µg/kg)
36	Naphthalene (µg/kg)

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Soil samples were collected at 2 feet in MW's 02567–MW–14 through 02567–MW–16.

Soil samples were collected at 3 feet in MW's 02567–MW–18 & 02567–MW–19.

The remaining soil samples were collected at a depth of 4 feet.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-788-3530 Fax: 413-788-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Soil Quality Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
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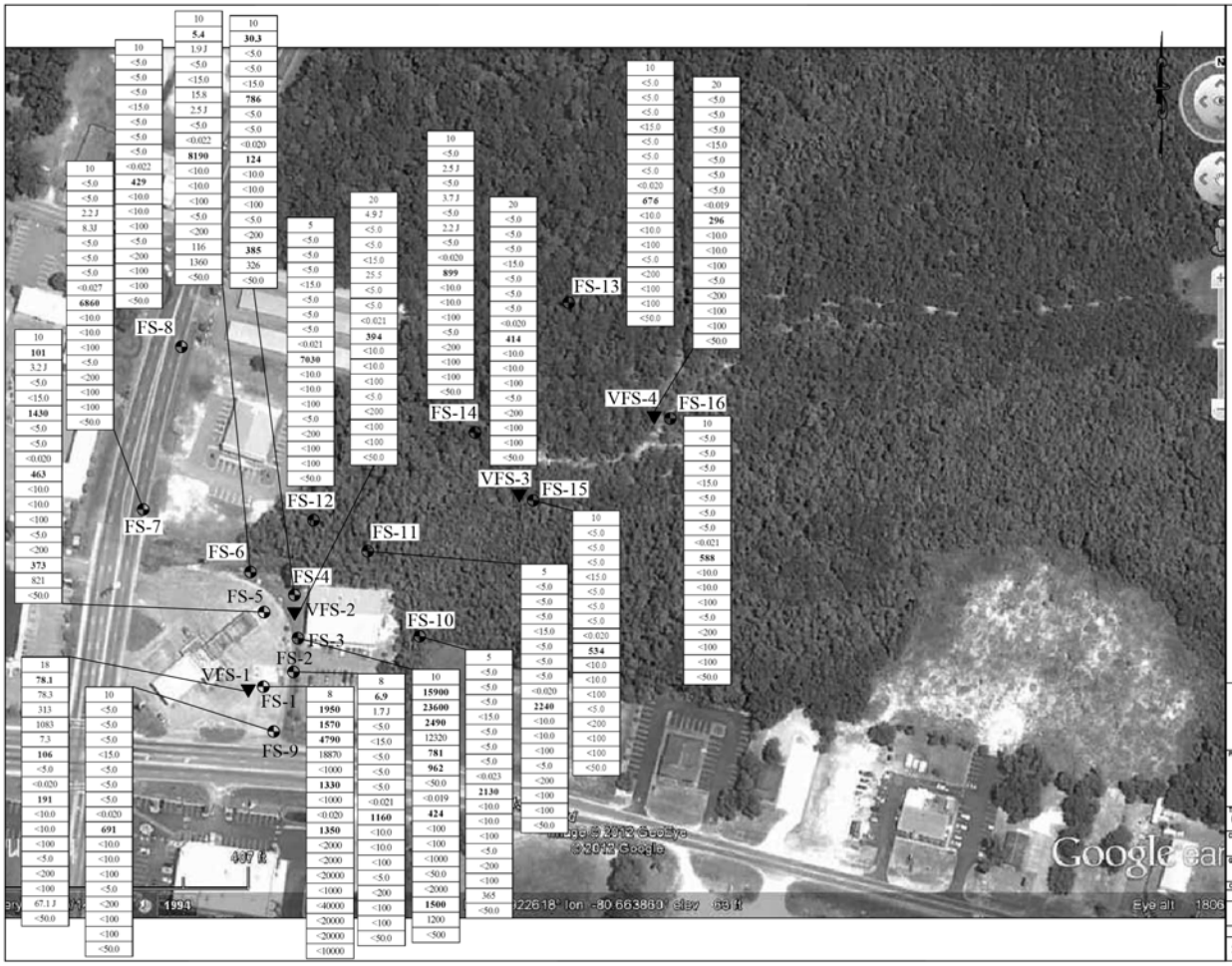


Legend

- ▼ Deep FS Point
- ✪ Shallow FS Point
- ECS–1 Well I.D.

8	Depth (ft)
5	Benzene
1,000	Toluene
700	Ethylbenzene
10,000	Total Xylenes
40	Methyl-tert-butyl ether
25	Naphthalene
5	1,2-Dichloroethane
0.05	1,2-Dibromoethane (EDB)
15	Lead
128	tert-Amylmethyl ether
47	Ethyl-tert-butyl ether
–	3,3-Dimethyl-1-Butanol
150	Diisopropyl ether
10,000	Ethanol
240	tert-Amyl Alcohol
1,400	tert-Butyl Alcohol
–	tert-Butyl Formate

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-788-3620 Fax: 413-788-3778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Groundwater Quality Map – Field Screening

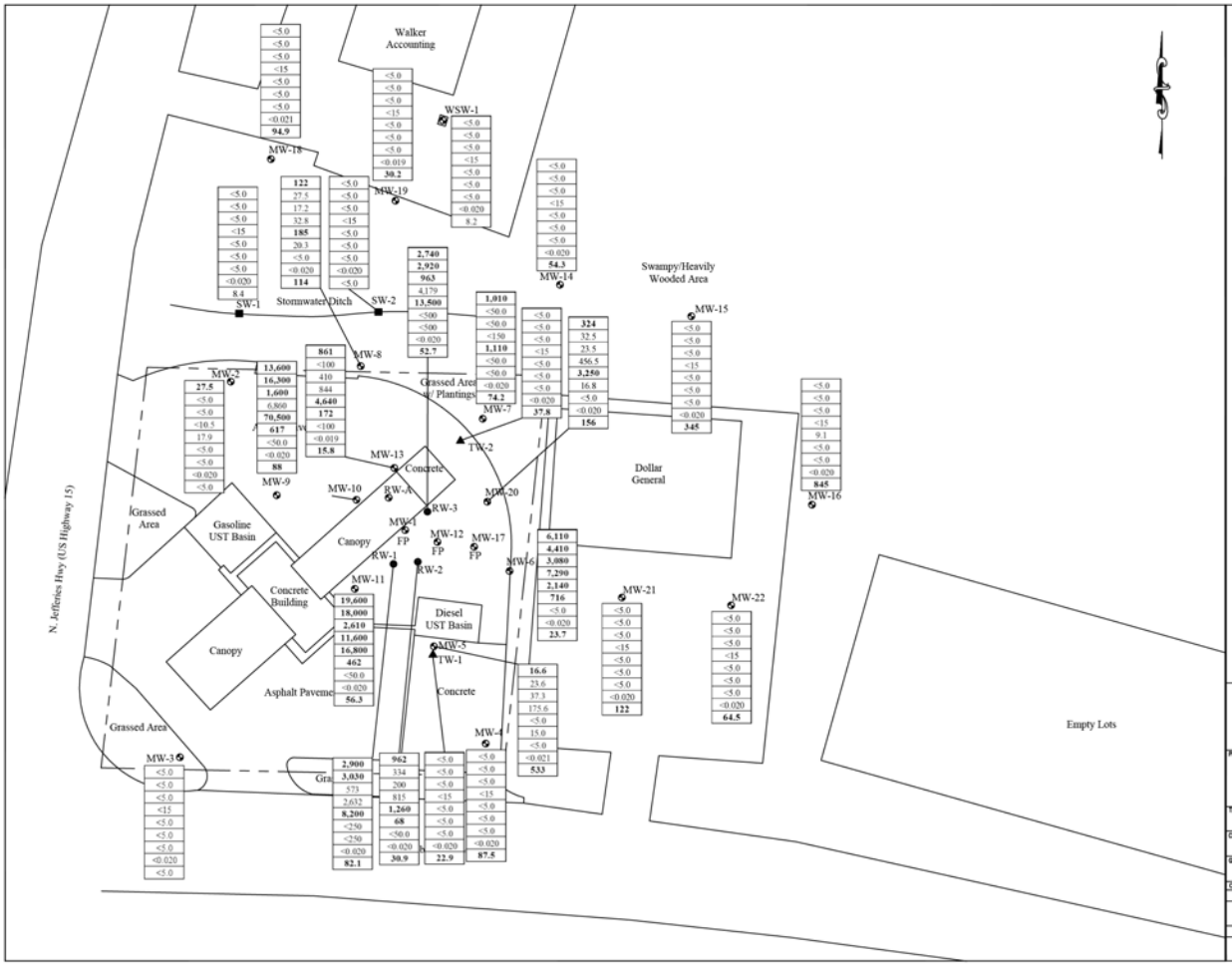
CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 150 75 0 75 150

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	MC	MC	MC

SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 150'	3/25/13	14-215778	4A



Legend

- Surface Water Sample Loc.
- Recovery Well
- Telescoping Monitoring Well
- Shallow Monitoring Well
- ECS–1 Well I.D.

5	Benzene (µg/L)
1,000	Toluene (µg/L)
700	Ethyl-benzene (µg/L)
10,000	Total Xylenes (µg/L)
40	MTBE (µg/L)
25	Naphthalene (µg/L)
5	1,2 DCA (µg/L)
0.05	EDB (µg/L)
15	Total Lead (µg/L)

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

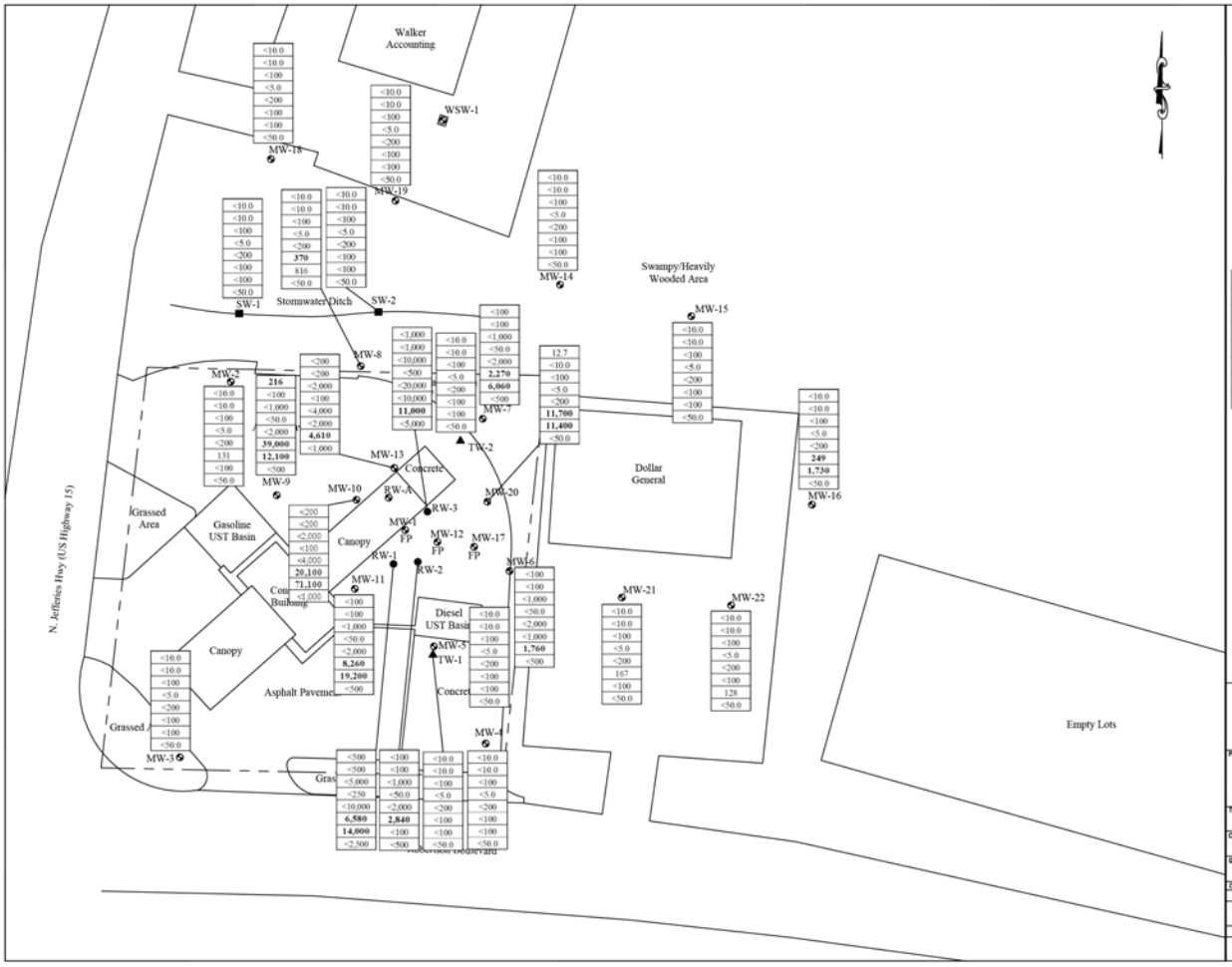
TITLE:
Groundwater Quality Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	4/25/13	14-215778	4B



Legend

- Surface Water Sample Loc.
- Recovery Well
- Telescoping Monitoring Well
- Shallow Monitoring Well
- ECS−1 Well I.D.

128	TAME (µg/L)
47	ETBE (µg/L)
--	3,3-Dimethyl-1-butanol (µg/L)
150	DIPE (µg/L)
10,000	Ethanol (µg/L)
240	TAA (µg/L)
1,400	TBA (µg/L)
--	TBF (µg/L)

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-786-8776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

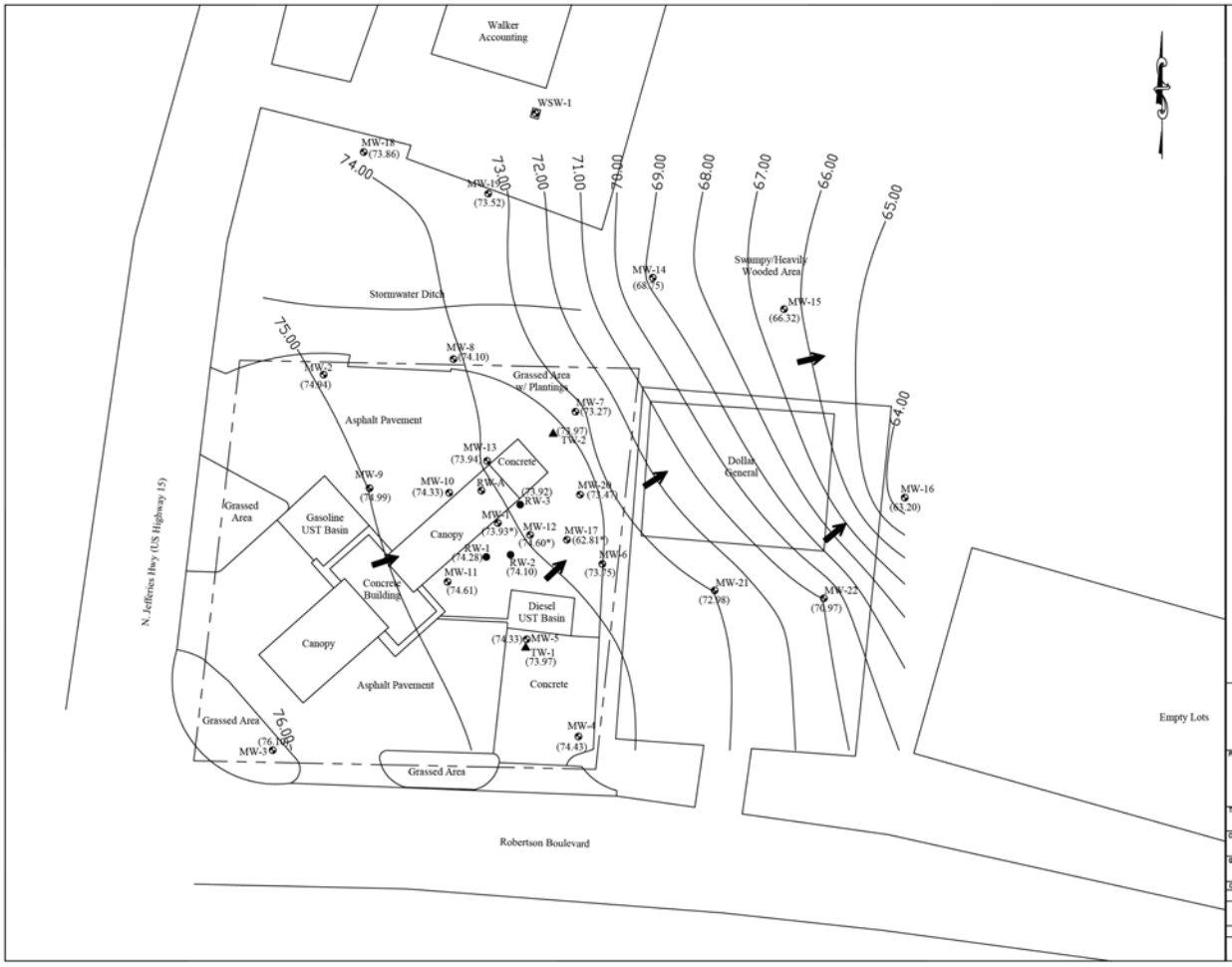
TITLE:
Groundwater Quality Map – 8 Oxygenates

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	4/25/13	14-215778	4C



Legend

- Recovery Well
- Telescoping Monitoring Well
- Shallow Monitoring Well
- ECS–1 Well I.D.
- 73.71 Water Table Elevation
- 73.71* Not Used in Contour due to Free Product
- 90.0 Water Table Contour (Dashed where inferred)
- Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Horizontal, and vertical locations of wells, and selected site features determined through measurements made by representatives of ECS.

Water table elevation are based on an assumed benchmark of 78.00 feet located at the MSL.

Water table contours, and flow directions assume homogenous, isotropic aquifer conditions, and horizontal flow.

Fluctuations in the level of the water table may occur due to factors not accounted for at the time of measurement.

Water table contours are interpolated between data points, and inferred in other areas.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-786-8776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

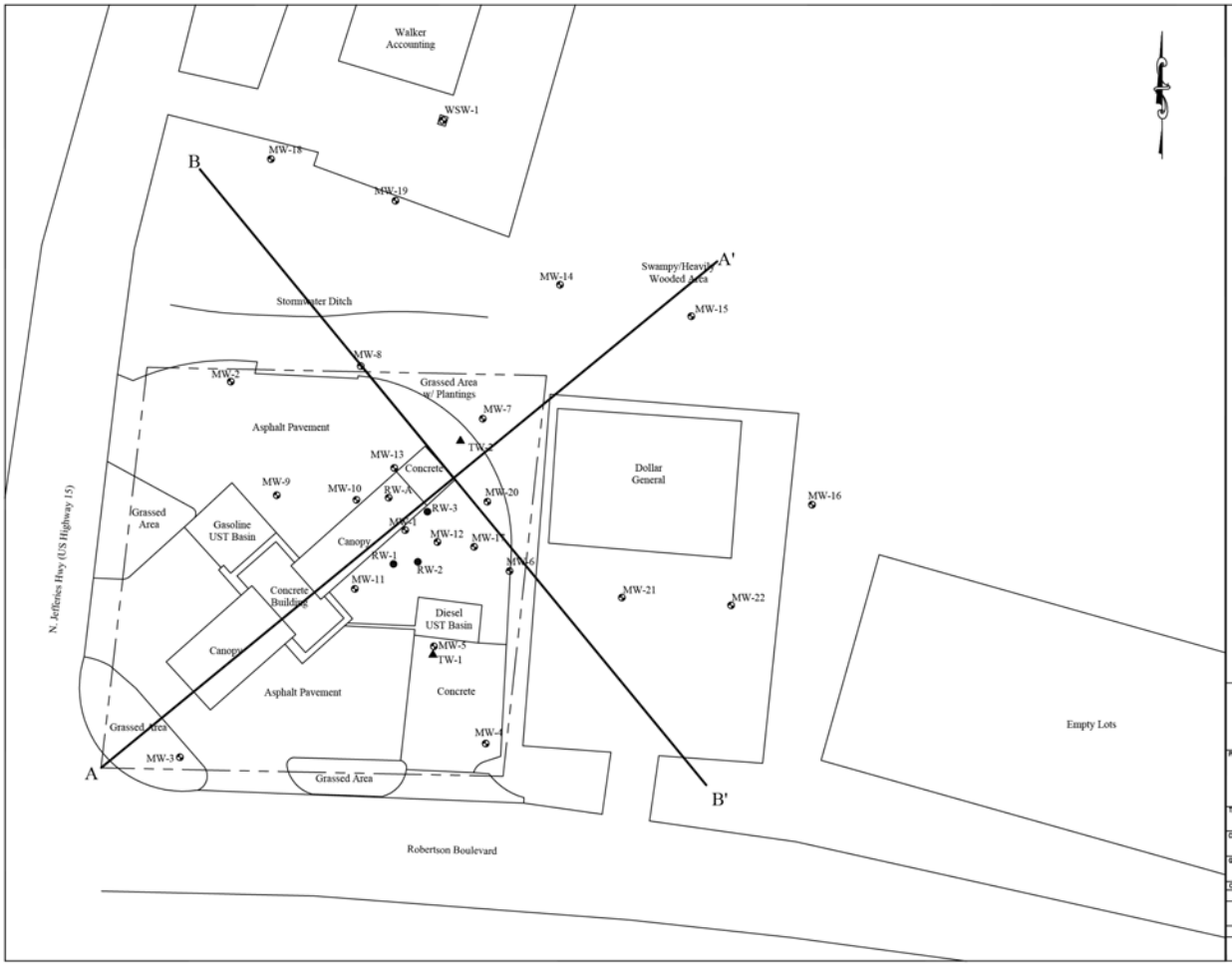
TITLE:
Groundwater Elevation Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	4/25/13	14-215778	5



Legend

- Recovery Well
- Telescoping Monitoring Well
- Shallow Monitoring Well
- ECS–1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

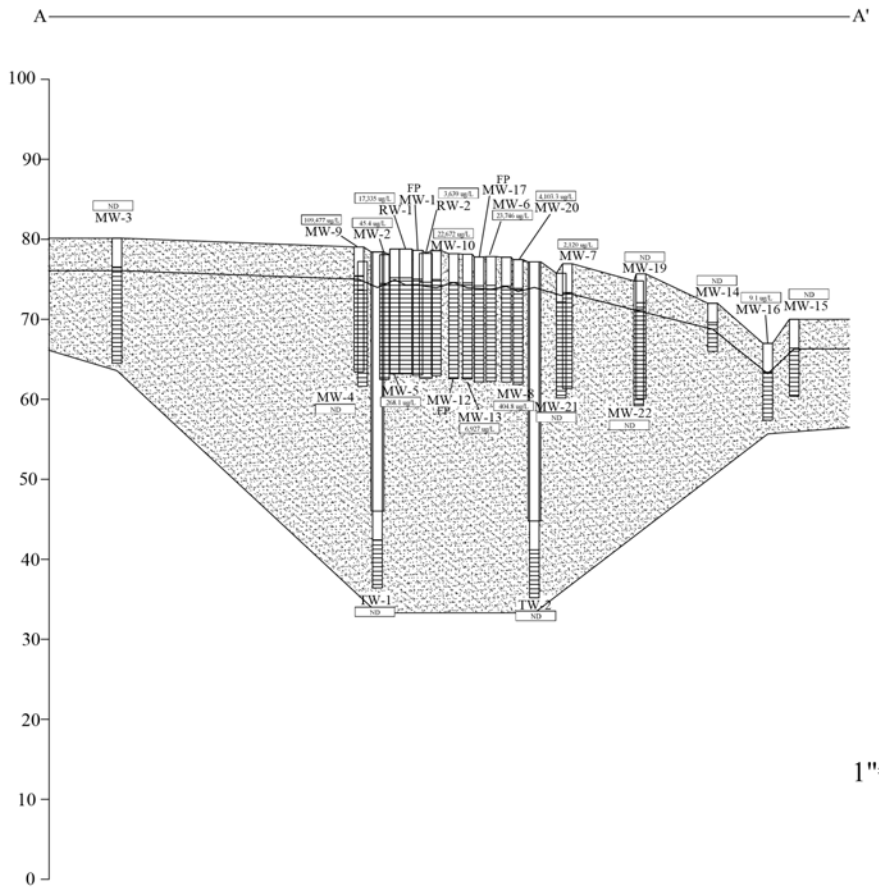
TITLE:
Cross Section Location Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	4/25/13	14-215778	6A



1"=10'

1"=60'

Legend

= Sand

ND = Sum of BTEX, MTBE & Naph

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-788-3530 Fax: 413-788-2778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

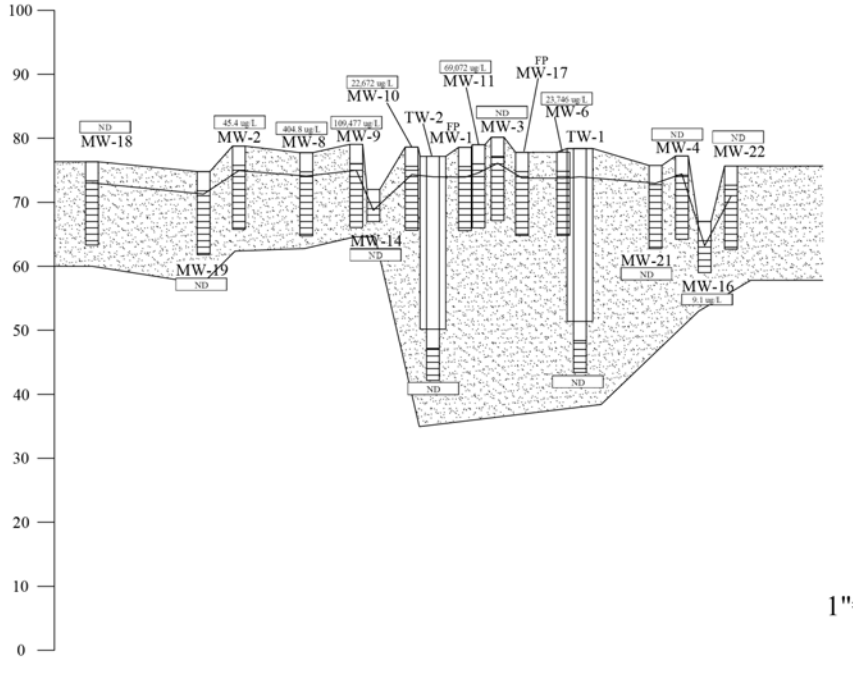
TITLE:
Cross Section A-A'

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	5/7/13	14-215778	6B



1"=20'

1"=60'

Legend

= Sand

ND = Sum of BTEX, MTBE & Naph

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-768-3530 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Cross Section B-B'

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	BS	BS	BS
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	5/7/13	14-215778	6C

APPENDIX A

SITE SURVEY

NOT APPLICABLE

APPENDIX B

SAMPLING LOGS AND LABORATORY REPORTS

GAUGE REPORT

Environmental Compliance Services, Inc.
13504 South Point Blvd., Unit F
Charlotte, North Carolina 28273

Project Name Rhdesway North Location Walterboro, SC

Project No. 14-215778 UST Permit # 02567 Date 4/17/2013

Measured By P. Pike Weather Mostly Sunny, 60s

Well ID	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Product Recovered (gallons)	Well Depth (feet)	Volume Purged (gallons)
02567-MW-1	4.55	4.91	0.36	-----	-----	-----
02567-MW-2	-----	3.83	-----	-----	13.26	0.00
02567-MW-3	-----	4.04	-----	-----	13.96	0.00
02567-MW-4	-----	2.79	-----	-----	12.36	4.68
02567-MW-5	-----	3.75	-----	-----	12.50	4.28
02567-MW-6	-----	4.08	-----	-----	12.72	4.22
02567-MW-7	-----	3.67	-----	-----	12.70	4.42
02567-MW-8	-----	3.65	-----	-----	12.97	4.56
02567-MW-9	-----	4.05	-----	-----	12.55	4.16
02567-MW-10	-----	4.29	-----	-----	12.67	4.10
02567-MW-11	-----	4.40	-----	-----	12.16	3.79
02567-MW-12	4.19	5.06	0.87	-----	-----	-----
02567-MW-13	-----	4.19	-----	-----	12.62	4.12
02567-MW-14	-----	3.25	-----	-----	7.56	2.11
02567-MW-15	-----	3.68	-----	-----	11.39	1.26
02567-MW-16	-----	3.80	-----	-----	10.12	1.03
02567-MW-17	3.88	5.09	1.21	-----	-----	-----
02567-TW-1	-----	4.44	-----	-----	35.42	25.25
02567-TW-2	-----	3.20	-----	-----	36.85	17.82
02567-RW-1	-----	4.40	-----	-----	12.94	16.76
02567-RW-2	-----	4.13	-----	-----	13.23	17.83
02567-RW-3		4.18	-----	-----	13.20	17.67
02567-WSW-1	-----	NM	-----	-----	NM	

Remarks:

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/17/13
Field Personnel P. Pike
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.09 Conductivity 4.49 = 4.67
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 8.71

Chain of Custody

P.Pike	4/19/13 7:30	ECS Office	4/19/13 7:30
Relinquished by	Date/Time	Received by	Date/Time
ECS Office	4/19/13 11:45	Pace	4/19/13 11:45
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW-1**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval Unknown ft. to Unknown ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 4.91 ft.
Depth to FP (Free product) 4.55 ft.
FP Thickness 0.36 ft.
Length of Water Column (LWC=TWD-DGW) 0.00 ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.163 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/17/13
Field Personnel P. Pike
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.09 Conductivity 4.49 = 4.67
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 8.71

Chain of Custody

P.Pike	4/19/13 7:30	ECS Office	4/19/13 7:30
Relinquished by	Date/Time	Received by	Date/Time
ECS Office	4/19/13 11:45	Pace	4/19/13 11:45
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW-2**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval Unknown ft. to Unknown ft.
Total Well Depth (TWD) 13.26 ft.
Depth to GW(DGW) 3.83 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 9.43 ft.

1Csg. Vol. (LWC*C)= 9.43 X 0.163 = 1.54 gal.
3Csg. Volume = 3x 1.54 = 4.61 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 0.00 gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								0.00
Time (military)								17:05
pH (s.u.)								6.18
O.R.P. (mV)								-48
Temperature (°C)								22.5
Specific Cond. (mS/cm)								0.795
Dissolved Oxygen (mg/L)								1.89
Turbidity (NTU)								27.8

Remarks Nonpurge well samoled with new poly bailer.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-3				
Well Diameter (D)	2.0 inch		____ or feet		
conversion factor(C): 3.143*(D/2)^2			for a 2 inch well C=	0.163	
for a 4 inch well C=	0.652		for a 6 inch well C=	1.469	
Screen Interval	10 ft.	to	40 ft.		
Total Well Depth (TWD)	13.96 ft.				
Depth to GW(DGW)	4.04 ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	9.92 ft.				
1Csg. Vol. (LWC*C)=	9.92	X	0.163	=	1.62 gal.
3Csg. Volume = 3x	1.62	=	4.85	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling	0.00 gal.				
Well Yield	Low ____	Medium ____	High	X	

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								0.00
Time (military)								17:20
pH (s.u.)								6.02
O.R.P. (mV)								30
Temperature (°C)								21.03
Specific Cond. (mS/cm)								0.385
Dissolved Oxygen (mg/L)								1.28
Turbidity (NTU)								8.6

Remarks: Nonpurge well samoled with new poly bailer.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-4				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	10 ft.	to	40 ft.		
Total Well Depth (TWD)	12.36	ft.			
Depth to GW(DGW)	2.79	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	9.57	ft.			
1Csg. Vol. (LWC*C)=	9.57	X	0.163	=	1.56 gal.
3Csg. Volume = 3x	1.56	=	4.68	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.68	gal.	
Well Yield	Low		Medium		High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.56	1.56	1.56				0.00
Time (military)	17:44	17:47	17:50	17:53				18:00
pH (s.u.)	6.38	6.30	6.26	6.23				6.28
O.R.P. (mV)	5	6	9	5				3
Temperature (°C)	21.46	20.71	21.06	21.10				21.17
Specific Cond. (mS/cm)	0.611	0.620	0.592	0.621				0.618
Dissolved Oxygen (mg/L)	1.22	1.31	1.17	1.47				1.10
Turbidity (NTU)	7.3	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13			Well #	**02567-MW-5**
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's			Well Diameter (D)	2.0 inch _____ or feet
Ambient Air Temperature	60 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID# 02567		Screen Interval	20 ft. to 40 ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	12.50 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	3.75 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba W22XD - U22	Serial Number:	T908007	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	8.75 ft.
pH 4.0 =	4.10	Conductivity 4.49 =	4.5		
Turbidity 0.0 =	3.2	Dissolved Oxygen 8.52 =	8.85	1Csg. Vol. (LWC*C)=	8.75 X 0.163 = 1.43 gal.
	Chain of Custody			3Csg. Volume = 3x	1.43 = 4.28 gals.(Std. Purge Vol)
P.Pike	4/19/13 7:30	ECS Office	4/19/13 7:30	Total Vol. of Water Purged Before Sampling	4.28 gal.
Relinquished by	Date/Time	Received by	Date/Time	Well Yield	Low _____ Medium _____ High X
ECS Office	4/19/13 11:45	Pace	4/19/13 11:45		
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.43	1.43	1.43	1.43	1.43		0.00
Time (military)	10:20	10:23	10:26	10:29	10:33	10:37		10:45
pH (s.u.)	5.92	5.88	5.39	5.27	5.32	5.31		5.32
O.R.P. (mV)	22	16	79	91	85	94		82
Temperature (°C)	22.47	22.18	21.85	21.86	21.83	21.76		21.66
Specific Cond. (mS/cm)	0.556	0.547	0.317	0.254	0.304	0.266		0.227
Dissolved Oxygen (mg/L)	1.44	1.04	1.21	1.09	1.00	1.31		1.28
Turbidity (NTU)	38.4	>999	815.0	>999	>999	>999		>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-6				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	20.05 ft.	to	35.05 ft.		
Total Well Depth (TWD)	12.72	ft.			
Depth to GW(DGW)	4.08	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.64	ft.			
1Csg. Vol. (LWC*C)=	8.64	X	0.163	=	1.41 gal.
3Csg. Volume = 3x	1.41	=	4.22	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.22	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.41	1.41	1.41				0.00
Time (military)	18:13	18:16	18:19	18:23				18:30
pH (s.u.)	5.96	5.97	6.04	6.06				6.05
O.R.P. (mV)	20	7	-17	-14				-8
Temperature (°C)	20.75	20.21	20.06	20.09				20.21
Specific Cond. (mS/cm)	0.597	0.702	0.794	0.753				0.724
Dissolved Oxygen (mg/L)	3.01	2.68	2.15	1.75				1.69
Turbidity (NTU)	68.9	202.0	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-7				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	19.92 ft.	to	34.92 ft.		
Total Well Depth (TWD)	12.70	ft.			
Depth to GW(DGW)	3.67	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	9.03	ft.			
1Csg. Vol. (LWC*C)=	9.03	X	0.163	=	1.47 gal.
3Csg. Volume = 3x	1.47	=	4.42	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.42	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.47	1.47	1.47				0.00
Time (military)	11:05	11:08	11:11	11:14				11:15
pH (s.u.)	5.25	5.26	5.20	5.16				5.16
O.R.P. (mV)	162	155	170	160				152
Temperature (°C)	20.53	19.77	19.84	19.87				19.83
Specific Cond. (mS/cm)	0.300	0.218	0.199	0.190				0.190
Dissolved Oxygen (mg/L)	2.03	2.35	1.96	1.80				1.22
Turbidity (NTU)	649.0	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-8				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	20.08 ft.	to	35.08 ft.		
Total Well Depth (TWD)	12.97	ft.			
Depth to GW(DGW)	3.65	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	9.32	ft.			
1Csg. Vol. (LWC*C)=	9.32	X	0.163	=	1.52 gal.
3Csg. Volume = 3x	1.52	=	4.56	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.56	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.52	1.52	1.52				0.00
Time (military)	16:37	16:40	16:43	16:46				16:50
pH (s.u.)	5.03	4.72	4.71	4.73				4.71
O.R.P. (mV)	90	112	113	101				103
Temperature (°C)	20.88	19.97	19.62	19.71				19.69
Specific Cond. (mS/cm)	0.108	0.108	0.130	0.134				0.131
Dissolved Oxygen (mg/L)	1.48	1.58	1.56	1.59				1.18
Turbidity (NTU)	27.9	679.0	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-9				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	20.17 ft.	to	35.17 ft.		
Total Well Depth (TWD)	12.55	ft.			
Depth to GW(DGW)	4.05	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.50	ft.			
1Csg. Vol. (LWC*C)=	8.50	X	0.163	=	1.39 gal.
3Csg. Volume = 3x	1.39	=	4.16	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.16	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.39	1.39	1.39				0.00
Time (military)	15:52	15:55	15:58	16:02				16:05
pH (s.u.)	5.75	5.72	5.67	5.67				5.71
O.R.P. (mV)	38	43	44	48				57
Temperature (°C)	21.50	21.11	20.84	20.50				20.71
Specific Cond. (mS/cm)	0.391	0.417	0.386	0.362				0.336
Dissolved Oxygen (mg/L)	1.59	1.41	1.40	0.98				0.81
Turbidity (NTU)	51.2	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-10				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	25.16 ft.	to	40.16 ft.		
Total Well Depth (TWD)	12.67	ft.			
Depth to GW(DGW)	4.29	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.38	ft.			
1Csg. Vol. (LWC*C)=	8.38	X	0.163	=	1.37 gal.
3Csg. Volume = 3x	1.37	=	4.10	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.10	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.37	1.37	1.37				0.00
Time (military)	15:00	15:03	15:06	15:10				15:15
pH (s.u.)	5.51	5.46	5.41	5.39				5.46
O.R.P. (mV)	44	63	69	58				27
Temperature (°C)	20.40	19.45	19.18	19.21				19.32
Specific Cond. (mS/cm)	0.212	0.254	0.289	0.264				0.241
Dissolved Oxygen (mg/L)	2.23	2.91	2.68	2.39				1.61
Turbidity (NTU)	13.5	542.0	>999	>999				851.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-11				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	20.23 ft.	to	35.23 ft.		
Total Well Depth (TWD)	12.16	ft.			
Depth to GW(DGW)	4.40	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	7.76	ft.			
1Csg. Vol. (LWC*C)=	7.76	X	0.163	=	1.26 gal.
3Csg. Volume = 3x	1.26	=	3.79	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			3.79	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.26	1.26	1.26				0.00
Time (military)	15:27	15:30	15:33	15:36				15:40
pH (s.u.)	5.78	5.80	5.74	5.72				5.75
O.R.P. (mV)	8	11	26	32				15
Temperature (°C)	21.77	21.66	21.34	21.30				21.41
Specific Cond. (mS/cm)	0.666	0.713	0.641	0.622				0.640
Dissolved Oxygen (mg/L)	2.29	1.81	1.83	1.74				1.51
Turbidity (NTU)	39.9	815.0	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
Chain of Custody					
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-12				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2			for a 2 inch well C=		0.163
for a 4 inch well C=	0.652		for a 6 inch well C=		1.469
Screen Interval	19.99	ft.	to	34.99	ft.
Total Well Depth (TWD)	-----				ft.
Depth to GW(DGW)	5.06				ft.
Depth to FP (Free product)	4.19				ft.
FP Thickness	0.87				ft.
Length of Water Column (LWC=TWD-DGW)				0.00	ft.
1Csg. Vol. (LWC*C)=	0.00	X	0.163	= 0.00	gal.
3Csg. Volume = 3x	0.00	=	0.00		gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling				-----	gal.
Well Yield	Low		Medium	High	

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks: Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-13				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	25.19 ft.	to	40.19 ft.		
Total Well Depth (TWD)	12.62	ft.			
Depth to GW(DGW)	4.19	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.43	ft.			
1Csg. Vol. (LWC*C)=	8.43	X	0.163	=	1.37 gal.
3Csg. Volume = 3x	1.37	=	4.12	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.12	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.37	1.37	1.37				0.00
Time (military)	14:36	14:39	14:42	14:45				14:50
pH (s.u.)	5.92	5.40	5.46	5.48				5.49
O.R.P. (mV)	3	72	50	29				29
Temperature (°C)	21.41	20.58	20.36	20.26				20.32
Specific Cond. (mS/cm)	0.553	0.270	0.385	0.399				0.364
Dissolved Oxygen (mg/L)	2.74	3.13	2.54	1.74				1.81
Turbidity (NTU)	27.4	541.0	>999	>999				851.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	4.10		Conductivity 4.49 =	4.5	
Turbidity 0.0 =	3.2		Dissolved Oxygen 8.52 =	8.85	
Chain of Custody					
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-14				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	24.74 ft.	to	39.74 ft.		
Total Well Depth (TWD)	7.56	ft.			
Depth to GW(DGW)	3.25	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	4.31	ft.			
1Csg. Vol. (LWC*C)=	4.31	X	0.163	=	0.70 gal.
3Csg. Volume = 3x	0.70	=	2.11	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			2.11	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	0.70	0.70	0.70				0.00
Time (military)	11:55	11:58	12:01	12:04				12:10
pH (s.u.)	5.90	5.82	5.75	5.76				5.82
O.R.P. (mV)	61	27	79	65				92
Temperature (°C)	20.23	19.17	18.59	18.64				18.93
Specific Cond. (mS/cm)	0.187	0.249	0.221	0.192				0.189
Dissolved Oxygen (mg/L)	2.41	2.23	0.81	2.08				2.63
Turbidity (NTU)	941.0	889.0	>999	805.0				871.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13			Well #	**02567-MW-15**
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F			Well Diameter (D)	2.0 inch _____ or feet
				conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID#	02567	Screen Interval	25.13 ft. to 40.13 ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	11.39 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	3.68 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba W22XD - U22	Serial Number:	T908007	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	7.71 ft.
pH 4.0 =	4.10	Conductivity 4.49 =	4.5		
Turbidity 0.0 =	3.2	Dissolved Oxygen 8.52 =	8.85		
	Chain of Custody			1Csg. Vol. (LWC*C)=	7.71 X 0.163 = 1.26 gal.
P.Pike	4/19/13 7:30	ECS Office	4/19/13 7:30	3Csg. Volume = 3x	1.26 = 3.77 gals.(Std. Purge Vol)
Relinquished by	Date/Time	Received by	Date/Time	Total Vol. of Water Purged Before Sampling	1.26 gal.
ECS Office	4/19/13 11:45	Pace	4/19/13 11:45	Well Yield	Low X Medium _____ High _____
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.26						0.00
Time (military)	12:20	12:23						16:15
pH (s.u.)	5.78	5.22						5.47
O.R.P. (mV)	134	192						162
Temperature (°C)	19.54	19.62						22.13
Specific Cond. (mS/cm)	0.101	0.069						0.078
Dissolved Oxygen (mg/L)	2.35	0.90						5.68
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well purged dry after 1 well volume.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13			Well #	**02567-MW-16**
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's			Well Diameter (D)	2.0 inch _____ or feet
Ambient Air Temperature	60 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID#	02567	Screen Interval	25.11 ft. to 40.11 ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	10.12 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	3.80 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba W22XD - U22	Serial Number:	T908007	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	6.32 ft.
pH 4.0 =	4.09	Conductivity 4.49 =	4.67		
Turbidity 0.0 =	0.0	Dissolved Oxygen 8.52 =	8.71		
	Chain of Custody			1Csg. Vol. (LWC*C)=	6.32 X 0.163 = 1.03 gal.
P.Pike	4/19/13 7:30	ECS Office	4/19/13 7:30	3Csg. Volume = 3x	1.03 = 3.09 gals.(Std. Purge Vol)
Relinquished by	Date/Time	Received by	Date/Time	Total Vol. of Water Purged Before Sampling	1.03 gal.
ECS Office	4/19/13 11:45	Pace	4/19/13 11:45	Well Yield	Low X Medium _____ High _____
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.03						0.00
Time (military)	13:10	13:13						13:35
pH (s.u.)	5.03	5.16						
O.R.P. (mV)	219	200						
Temperature (°C)	19.26	18.90						
Specific Cond. (mS/cm)	0.11	0.22						
Dissolved Oxygen (mg/L)	2.32	1.71						
Turbidity (NTU)	827.0	>999						

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well purged dry afterone well volume. Did not recharge to get water quality readings.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.10		Conductivity 4.49 =	4.5	
Turbidity 0.0 =	3.2		Dissolved Oxygen 8.52 =	8.85	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-17			
Well Diameter (D)	2.0 inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469
Screen Interval	20.02 ft.	to	35.02 ft.	
Total Well Depth (TWD)	-----	ft.		
Depth to GW(DGW)	5.09	ft.		
Depth to FP (Free product)	3.88	ft.		
FP Thickness	1.21	ft.		
Length of Water Column (LWC=TWD-DGW)	#VALUE!	ft.		
1Csg. Vol. (LWC*C)=	#VALUE!	X	0.163	= ##### gal.
3Csg. Volume = 3x	#VALUE!	=	########	gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling	-----	gal.		
Well Yield	Low	Medium	High	

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks: Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	4.10		Conductivity 4.49 =	4.5	
Turbidity 0.0 =	3.2		Dissolved Oxygen 8.52 =	8.85	
Chain of Custody					
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-TW-1			
Well Diameter (D)	2.0 inch		or feet	
conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C=	0.163	for a 4 inch well C=	0.652
for a 6 inch well C=	1.469			
Screen Interval	20.67 ft.	to	35.67 ft.	
Total Well Depth (TWD)	35.42 ft.			
Depth to GW(DGW)	4.44 ft.			
Depth to FP (Free product)	----- ft.			
FP Thickness	----- ft.			
Length of Water Column (LWC=TWD-DGW)	30.98 ft.			
1Csg. Vol. (LWC*C)=	30.98 X	0.163 =	5.05 gal.	
3Csg. Volume = 3x	5.05 =	15.15 gals.(Std. Purge Vol)		
Total Vol. of Water Purged Before Sampling	25.25 gal.			
Well Yield	Low	Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	5.05	5.05	5.05	5.05	5.05		0.00
Time (military)	9:42	9:47	9:52	9:57	10:04	10:10		10:15
pH (s.u.)	10.72	8.21	7.06	6.10	5.85	5.73		5.70
O.R.P. (mV)	37	10	118	143	141	144		143
Temperature (°C)	28.04	25.62	24.96	24.76	25.03	24.92		24.79
Specific Cond. (mS/cm)	0.652	0.100	0.048	0.046	0.047	0.042		0.040
Dissolved Oxygen (mg/L)	2.93	2.34	1.67	1.39	1.81	1.52		1.35
Turbidity (NTU)	66.0	369.0	>999	>999	>999	>999		654.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.10		Conductivity 4.49 =	4.5	
Turbidity 0.0 =	3.2		Dissolved Oxygen 8.52 =	8.85	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-TW-2				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	23.57 ft.	to	38.57 ft.		
Total Well Depth (TWD)	36.85	ft.			
Depth to GW(DGW)	3.20	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	33.65	ft.			
1Csg. Vol. (LWC*C)=	33.65	X	0.163	=	5.48 gal.
3Csg. Volume = 3x	5.48	=	16.45	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			17.82	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	5.48	5.48	5.48				0.00
Time (military)	11:09	11:14	11:19	11:25				11:30
pH (s.u.)	6.79	6.52	6.48	6.43				6.46
O.R.P. (mV)	-48	24	103	121				138
Temperature (°C)	25.42	24.77	24.33	24.21				24.21
Specific Cond. (mS/cm)	0.257	0.096	0.088	0.099				0.085
Dissolved Oxygen (mg/L)	1.10	1.35	1.73	1.57				1.49
Turbidity (NTU)	>999	>999	734.0	944.0				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-RW-1				
Well Diameter (D)	2.0 inch			or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C= 0.652		for a 6 inch well C=		1.469
Screen Interval	30.05 ft.	to	45.05 ft.		
Total Well Depth (TWD)	12.94 ft.				
Depth to GW(DGW)	4.40 ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	8.54 ft.				
1Csg. Vol. (LWC*C)=	8.54	X	0.653	=	5.58 gal.
3Csg. Volume = 3x	5.58	=	16.73	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling	16.76 gal.				
Well Yield	Low		Medium		High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		5.58	5.58	5.58				
Time (military)	13:45	13:50	13:55	14:00				14:05
pH (s.u.)	5.58	5.29	5.32	5.28				5.31
O.R.P. (mV)	53	92	84	87				49
Temperature (°C)	21.97	21.73	21.54	21.50				21.62
Specific Cond. (mS/cm)	0.196	0.172	0.192	0.221				0.191
Dissolved Oxygen (mg/L)	1.69	3.04	2.13	2.11				1.58
Turbidity (NTU)	34.9	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-RW-2				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval	25.16 ft.	to	40.16 ft.		
Total Well Depth (TWD)	13.23	ft.			
Depth to GW(DGW)	4.13	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	9.10	ft.			
1Csg. Vol. (LWC*C)=	9.10	X	0.653	=	5.94 gal.
3Csg. Volume = 3x	5.94	=	17.83	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			17.83	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	5.94	5.94	5.94				0.00
Time (military)	13:05	13:10	13:15	13:20				13:25
pH (s.u.)	5.78	5.77	5.81	5.83				5.80
O.R.P. (mV)	28	50	38	28				28
Temperature (°C)	23.50	22.40	21.91	21.99				22.04
Specific Cond. (mS/cm)	0.243	0.277	0.297	0.303				0.287
Dissolved Oxygen (mg/L)	3.06	3.47	3.49	2.26				1.95
Turbidity (NTU)	22.6	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.09		Conductivity 4.49 =	4.67	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	8.71	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-RW-3				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	25.09 ft.	to	40.09 ft.		
Total Well Depth (TWD)	13.20	ft.			
Depth to GW(DGW)	4.18	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	9.02	ft.			
1Csg. Vol. (LWC*C)=	9.02	X	0.653	=	5.89 gal.
3Csg. Volume = 3x	5.89	=	17.67	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			17.67	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		5.89	5.89	5.89				
Time (military)	12:25	12:30	12:35	12:40				12:45
pH (s.u.)	4.90	4.91	5.02	5.00				5.00
O.R.P. (mV)	81	101	83	80				49
Temperature (°C)	22.53	21.56	21.38	21.39				21.45
Specific Cond. (mS/cm)	0.146	0.255	0.245	0.256				0.260
Dissolved Oxygen (mg/L)	1.75	3.76	2.43	2.61				NR
Turbidity (NTU)	59.7	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
DO reading was not recorded.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/18/13				
Field Personnel	P. Pike				
General Weather Conditions	Sunny, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.10		Conductivity 4.49 =	4.5	
Turbidity 0.0 =	3.2		Dissolved Oxygen 8.52 =	8.85	
	Chain of Custody				
P.Pike	4/19/13 7:30		ECS Office	4/19/13 7:30	
Relinquished by	Date/Time		Received by	Date/Time	
ECS Office	4/19/13 11:45		Pace	4/19/13 11:45	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-WSW-1				
Well Diameter (D)	2.0 inch		_____ or feet		
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=	0.163		
for a 4 inch well C=	0.652	for a 6 inch well C=	1.469		
Screen Interval	22.24 ft.	to	37.24 ft.		
Total Well Depth (TWD)	NM ft.				
Depth to GW(DGW)	NM ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	#VALUE! ft.				
1Csg. Vol. (LWC*C)=	#VALUE!	X	0.163	=	##### gal.
3Csg. Volume = 3x	#VALUE!	=	########	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling	0.00 gal.				
Well Yield	Low _____	Medium	X	High _____	

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								0.00
Time (military)								16:40
pH (s.u.)								7.52
O.R.P. (mV)								52
Temperature (°C)								23.51
Specific Cond. (mS/cm)								0.771
Dissolved Oxygen (mg/L)								4.73
Turbidity (NTU)								3.2

Remarks: WSW-1 was purged 10 minutes prior to being sampled.

GAUGE REPORT

Environmental Compliance Services, Inc.
13504 South Point Blvd., Unit F
Charlotte, North Carolina 28273

Project Name Rhdesway North Location Walterboro, SC

Project No. 14-215778 UST Permit # 02567 Date 4/30/2013

Measured By P. Pike Weather Mostly Sunny, 60s

Well ID	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Product Recovered (gallons)	Well Depth (feet)	Volume Purged (gallons)
02567-MW-18	-----	2.46	-----	-----	12.30	4.80
02567-MW-19	-----	1.28	-----	-----	12.12	5.31
02567-MW-20	-----	3.99	-----	-----	13.27	4.53
02567-MW-21	-----	2.77	-----	-----	12.59	4.80
02567-MW-22	-----	4.70	-----	-----	13.18	4.14
02567-SW1	-----	-----	-----	-----	-----	-----
02567-SW2	-----	-----	-----	-----	-----	-----

Remarks:

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/30/13
Field Personnel P. Pike
General Weather Conditions Cloudt, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.02 Conductivity 4.49 = 4.4
Turbidity 0.0 = 0.8 Dissolved Oxygen 8.52 = 8.93

Chain of Custody

P.Pike	5/1/13 7:30	ECS Office	5/1/13 7:30
Relinquished by ECS Office	Date/Time	Received by Pace	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW-18**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval Unknown ft. to Unknown ft.
Total Well Depth (TWD) 12.30 ft.
Depth to GW(DGW) 2.46 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 9.84 ft.

1Csg. Vol. (LWC*C)= 9.84 X 0.163 = 1.60 gal.
3Csg. Volume = 3x 1.60 = 4.81 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 4.80 gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.60	1.60	1.60				
Time (military)	11:40	11:43	11:46	11:49				11:55
pH (s.u.)	5.13	5.02	5.01	4.98				4.99
O.R.P. (mV)	97	122	136	118				115
Temperature (°C)	21.35	21.15	20.99	20.74				21.00
Specific Cond. (mS/cm)	0.129	0.144	0.133	0.126				0.125
Dissolved Oxygen (mg/L)	3.07	2.71	2.82	1.58				1.17
Turbidity (NTU)	234.0	>999	>999	>999				>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/30/13				
Field Personnel	P. Pike				
General Weather Conditions	Cloudt, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.02		Conductivity 4.49 =	4.4	
Turbidity 0.0 =	0.8		Dissolved Oxygen 8.52 =	8.93	
	Chain of Custody				
P.Pike	5/1/13 7:30		ECS Office	5/1/13 7:30	
Relinquished by ECS Office	Date/Time		Received by Pace	Date/Time	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-19				
Well Diameter (D)	2.0 inch			or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=		1.469
Screen Interval	Unknown ft.	to	Unknown ft.		
Total Well Depth (TWD)	12.12 ft.				
Depth to GW(DGW)	1.28 ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	10.84 ft.				
1Csg. Vol. (LWC*C)=	10.84	X	0.163	= 1.77 gal.	
3Csg. Volume = 3x	1.77	=	5.30	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			5.30 gal.		
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.77	1.77	1.77				0.00
Time (military)	11:10	11:13	11:16	11:19				11:25
pH (s.u.)	5.44	5.51	5.54	5.58				5.60
O.R.P. (mV)	48	48	11	2				2
Temperature (°C)	21.20	21.10	20.98	21.04				21.1
Specific Cond. (mS/cm)	0.265	0.335	0.322	0.337				0.321
Dissolved Oxygen (mg/L)	2.90	1.68	1.38	1.18				1.75
Turbidity (NTU)	17.5	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/30/13				
Field Personnel	P. Pike				
General Weather Conditions	Cloudt, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	4.02		Conductivity 4.49 =	4.4	
Turbidity 0.0 =	0.8		Dissolved Oxygen 8.52 =	8.93	
	Chain of Custody				
P.Pike	5/1/13 7:30		ECS Office	5/1/13 7:30	
Relinquished by ECS Office	Date/Time		Received by Pace	Date/Time	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-20				
Well Diameter (D)	2.0 inch			or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	10 ft.	to	40 ft.		
Total Well Depth (TWD)	13.27 ft.				
Depth to GW(DGW)	3.99 ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	9.28 ft.				
1Csg. Vol. (LWC*C)=	9.28	X	0.163	=	1.51 gal.
3Csg. Volume = 3x	1.51	=	4.54	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling	4.53 gal.				
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.51	1.51	1.51				0.00
Time (military)	14:07	14:10	14:13	14:16				14:20
pH (s.u.)	5.49	5.43	5.40	5.41				5.45
O.R.P. (mV)	2	23	36	32				0
Temperature (°C)	23.02	22.95	22.42	22.23				22.17
Specific Cond. (mS/cm)	0.281	0.259	0.264	0.265				0.277
Dissolved Oxygen (mg/L)	2.21	2.77	2.24	1.76				2.04
Turbidity (NTU)	37.8	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/30/13				
Field Personnel	P. Pike				
General Weather Conditions	Cloudt, 60's				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID#	02567	
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	4.02		Conductivity 4.49 =	4.4	
Turbidity 0.0 =	0.8		Dissolved Oxygen 8.52 =	8.93	
Chain of Custody					
P.Pike	5/1/13 7:30		ECS Office	5/1/13 7:30	
Relinquished by ECS Office	Date/Time		Received by Pace	Date/Time	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW-21				
Well Diameter (D)	2.0 inch			or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
	for a 4 inch well C=	0.652	for a 6 inch well C=	1.469	
Screen Interval	10 ft.	to	40 ft.		
Total Well Depth (TWD)	12.59 ft.				
Depth to GW(DGW)	2.77 ft.				
Depth to FP (Free product)	----- ft.				
FP Thickness	----- ft.				
Length of Water Column (LWC=TWD-DGW)	9.82 ft.				
1Csg. Vol. (LWC*C)=	9.82	X	0.163	=	1.60 gal.
3Csg. Volume = 3x	1.60	=	4.80	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling	4.80 gal.				
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.60	1.60	1.60				0.00
Time (military)	13:15	13:18	13:21	13:24				13:30
pH (s.u.)	5.12	4.98	4.95	4.94				4.97
O.R.P. (mV)	86	127	116	118				77
Temperature (°C)	24.71	25.52	24.65	24.38				24.3
Specific Cond. (mS/cm)	0.145	0.124	0.130	0.130				0.137
Dissolved Oxygen (mg/L)	3.19	4.15	2.20	1.95				1.40
Turbidity (NTU)	61.3	>999	>999	>999				>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/30/13
Field Personnel P. Pike
General Weather Conditions Cloudt, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.02 Conductivity 4.49 = 4.4
Turbidity 0.0 = 0.8 Dissolved Oxygen 8.52 = 8.93

Chain of Custody

P.Pike	5/1/13 7:30	ECS Office	5/1/13 7:30
Relinquished by ECS Office	Date/Time	Received by Pace	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW-22**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval 20 ft. to 40 ft.
Total Well Depth (TWD) 13.18 ft.
Depth to GW(DGW) 4.70 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 8.48 ft.

1Csg. Vol. (LWC*C)= 8.48 X 0.163 = 1.38 gal.
3Csg. Volume = 3x 1.38 = 4.15 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 4.28 gal.
Well Yield Low _____ Medium _____ High **X**

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)	0.00	1.38	1.38	1.38				0.00
Time (military)	12:47	12:50	12:53	12:56				13:00
pH (s.u.)	5.11	4.99	5.01	5.01				4.95
O.R.P. (mV)	162	189	183	181				149
Temperature (°C)	21.42	21.12	21.06	21.04				21.09
Specific Cond. (mS/cm)	0.115	0.132	0.139	0.151				0.137
Dissolved Oxygen (mg/L)	3.48	5.59	5.67	4.11				2.90
Turbidity (NTU)	205.0	>999	815.0	>999				>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/30/13
Field Personnel P. Pike
General Weather Conditions Cloudt, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.02 Conductivity 4.49 = 4.4
Turbidity 0.0 = 0.8 Dissolved Oxygen 8.52 = 8.93

Chain of Custody

P.Pike	5/1/13 7:30	ECS Office	5/1/13 7:30
Relinquished by	Date/Time	Received by	Date/Time
ECS Office		Pace	
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-SW1**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval 20.05 ft. to 35.05 ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) ----- ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.163 = ##### gal.
3Csg. Volume = 3x #VALUE! = ######## gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								0.00
Time (military)								12:20
pH (s.u.)								6.20
O.R.P. (mV)								56
Temperature (°C)								20.71
Specific Cond. (mS/cm)								0.213
Dissolved Oxygen (mg/L)								5.71
Turbidity (NTU)								37.0

Remarks Sample collected from creek using new disposable poly bailer.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/30/13
Field Personnel P. Pike
General Weather Conditions Cloudt, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 4.02 Conductivity 4.49 = 4.4
Turbidity 0.0 = 0.8 Dissolved Oxygen 8.52 = 8.93

Chain of Custody

P.Pike	5/1/13 7:30	ECS Office	5/1/13 7:30
Relinquished by	Date/Time	Received by	Date/Time
ECS Office		Pace	
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-SW2**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval 19.92 ft. to 34.92 ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) ----- ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.163 = ##### gal.
3Csg. Volume = 3x #VALUE! = ######## gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 4.42 gal.
Well Yield Low _____ Medium _____ High **X**

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								0.00
Time (military)								12:30
pH (s.u.)								6.37
O.R.P. (mV)								53
Temperature (°C)								20.81
Specific Cond. (mS/cm)								0.214
Dissolved Oxygen (mg/L)								4.14
Turbidity (NTU)								19.7

Remarks Sample collected from creek using new disposable poly bailer.

Pace Analytical®
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April 03, 2013

Mr. Brett Schaefer
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Dear Mr. Schaefer:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92152829001	**02567-FS1**	Water	03/25/13 11:45	03/28/13 15:55
92152829002	**02567-FS2**	Water	03/25/13 12:20	03/28/13 15:55
92152829003	**02567-FS3**	Water	03/25/13 12:40	03/28/13 15:55
92152829004	**02567-FS4**	Water	03/25/13 13:05	03/28/13 15:55
92152829005	**02567-FS5**	Water	03/25/13 15:10	03/28/13 15:55
92152829006	**02567-FS6**	Water	03/25/13 14:40	03/28/13 15:55
92152829007	**02567-FS7**	Water	03/25/13 16:10	03/28/13 15:55
92152829008	**02567-FS8**	Water	03/25/13 16:35	03/28/13 15:55
92152829009	**02567-VFS1**	Water	03/25/13 12:00	03/28/13 15:55
92152829010	**02567-VFS2**	Water	03/25/13 13:20	03/28/13 15:55
92152829011	**02567-FS9**	Water	03/26/13 07:55	03/28/13 15:55
92152829012	**02567-FS10**	Water	03/26/13 08:20	03/28/13 15:55
92152829013	**02567-FS11**	Water	03/26/13 08:50	03/28/13 15:55
92152829014	**02567-FS12**	Water	03/26/13 09:15	03/28/13 15:55
92152829015	**02567-FS13**	Water	03/26/13 10:05	03/28/13 15:55
92152829016	**02567-FS14**	Water	03/26/13 10:30	03/28/13 15:55
92152829017	**02567-FS15**	Water	03/26/13 10:50	03/28/13 15:55
92152829018	**02567-FS16**	Water	03/26/13 13:15	03/28/13 15:55
92152829019	**02567-VFS3**	Water	03/26/13 11:05	03/28/13 15:55
92152829020	**02567-VFS4**	Water	03/26/13 13:30	03/28/13 15:55

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SAMPLE ANALYTE COUNT

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92152829001	**02567-FS1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92152829002	**02567-FS2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829003	**02567-FS3**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829004	**02567-FS4**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829005	**02567-FS5**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829006	**02567-FS6**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829007	**02567-FS7**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829008	**02567-FS8**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829009	**02567-VFS1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829010	**02567-VFS2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829011	**02567-FS9**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829012	**02567-FS10**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829013	**02567-FS11**	EPA 8011	NU1	2	PASI-C

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SAMPLE ANALYTE COUNT

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829014	**02567-FS12**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829015	**02567-FS13**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829016	**02567-FS14**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829017	**02567-FS15**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829018	**02567-FS16**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829019	**02567-VFS3**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92152829020	**02567-VFS4**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS1 **Lab ID: 92152829001** Collected: 03/25/13 11:45 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:35	03/30/13 02:48	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	81	%	60-140		1	03/29/13 14:35	03/30/13 02:48	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**1350**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:19	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	20000	15400	200		04/03/13 04:57	75-85-4	
tert-Amylmethyl ether	ND	ug/L	2000	680	200		04/03/13 04:57	994-05-8	
Benzene	**1950**	ug/L	1000	340	200		04/03/13 04:57	71-43-2	D3
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	6420	200		04/03/13 04:57	624-95-3	
tert-Butyl Alcohol	ND	ug/L	20000	11500	200		04/03/13 04:57	75-65-0	
tert-Butyl Formate	ND	ug/L	10000	1460	200		04/03/13 04:57	762-75-4	
1,2-Dichloroethane	ND	ug/L	1000	360	200		04/03/13 04:57	107-06-2	
Diisopropyl ether	ND	ug/L	1000	340	200		04/03/13 04:57	108-20-3	
Ethanol	ND	ug/L	40000	27600	200		04/03/13 04:57	64-17-5	
Ethylbenzene	**4790**	ug/L	1000	320	200		04/03/13 04:57	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2000	720	200		04/03/13 04:57	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	1000	340	200		04/03/13 04:57	1634-04-4	
Naphthalene	**1330**	ug/L	1000	400	200		04/03/13 04:57	91-20-3	
Toluene	**1570**	ug/L	1000	320	200		04/03/13 04:57	108-88-3	
m&p-Xylene	**13500**	ug/L	2000	620	200		04/03/13 04:57	179601-23-1	
o-Xylene	**5370**	ug/L	1000	320	200		04/03/13 04:57	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		200		04/03/13 04:57	460-00-4	
Dibromofluoromethane (S)	102	%	70-130		200		04/03/13 04:57	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		200		04/03/13 04:57	17060-07-0	
Toluene-d8 (S)	99	%	70-130		200		04/03/13 04:57	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS2 **Lab ID: 92152829002** Collected: 03/25/13 12:20 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/29/13 14:35	03/30/13 03:08	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	85	%	60-140		1	03/29/13 14:35	03/30/13 03:08	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**1160**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:36	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 05:12	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 05:12	994-05-8	
Benzene	**6.9**	ug/L	5.0	1.7	1		03/31/13 05:12	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 05:12	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 05:12	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 05:12	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 05:12	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 05:12	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 05:12	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 05:12	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 05:12	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 05:12	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 05:12	91-20-3	
Toluene	**1.7J**	ug/L	5.0	1.6	1		03/31/13 05:12	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 05:12	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 05:12	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		03/31/13 05:12	460-00-4	
Dibromofluoromethane (S)	106	%	70-130		1		03/31/13 05:12	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		03/31/13 05:12	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		03/31/13 05:12	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS3 **Lab ID: 92152829003** Collected: 03/25/13 12:40 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/29/13 14:35	03/30/13 03:28	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	86	%	60-140		1	03/29/13 14:35	03/30/13 03:28	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**424**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:42	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1500**	ug/L	1000	768	10		03/31/13 11:30	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	34.0	10		03/31/13 11:30	994-05-8	
Benzene	**15900**	ug/L	1250	425	250		04/01/13 17:47	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	321	10		03/31/13 11:30	624-95-3	
tert-Butyl Alcohol	**1200**	ug/L	1000	577	10		03/31/13 11:30	75-65-0	
tert-Butyl Formate	ND	ug/L	500	73.0	10		03/31/13 11:30	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	18.0	10		03/31/13 11:30	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	17.0	10		03/31/13 11:30	108-20-3	
Ethanol	ND	ug/L	2000	1380	10		03/31/13 11:30	64-17-5	
Ethylbenzene	**2490**	ug/L	1250	400	250		04/01/13 17:47	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	36.0	10		03/31/13 11:30	637-92-3	
Methyl-tert-butyl ether	**781**	ug/L	50.0	17.0	10		03/31/13 11:30	1634-04-4	
Naphthalene	**962**	ug/L	50.0	20.0	10		03/31/13 11:30	91-20-3	
Toluene	**23600**	ug/L	1250	400	250		04/01/13 17:47	108-88-3	
m&p-Xylene	**8560**	ug/L	2500	775	250		04/01/13 17:47	179601-23-1	
o-Xylene	**3760**	ug/L	1250	400	250		04/01/13 17:47	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		10		03/31/13 11:30	460-00-4	
Dibromofluoromethane (S)	96	%	70-130		10		03/31/13 11:30	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%	70-130		10		03/31/13 11:30	17060-07-0	
Toluene-d8 (S)	96	%	70-130		10		03/31/13 11:30	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS4 **Lab ID: 92152829004** Collected: 03/25/13 13:05 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:35	03/30/13 03:48	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	63	%	60-140		1	03/29/13 14:35	03/30/13 03:48	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**124**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:45	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**385**	ug/L	100	76.8	1		03/31/13 05:28	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 05:28	994-05-8	
Benzene	**30.3**	ug/L	5.0	1.7	1		03/31/13 05:28	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 05:28	624-95-3	
tert-Butyl Alcohol	**326**	ug/L	100	57.7	1		03/31/13 05:28	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 05:28	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 05:28	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 05:28	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 05:28	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 05:28	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 05:28	637-92-3	
Methyl-tert-butyl ether	**786**	ug/L	50.0	17.0	10		04/01/13 16:29	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 05:28	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 05:28	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 05:28	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 05:28	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		03/31/13 05:28	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		1		03/31/13 05:28	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/31/13 05:28	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		03/31/13 05:28	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS5 **Lab ID: 92152829005** Collected: 03/25/13 15:10 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:35	03/30/13 04:08	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	90	%	60-140		1	03/29/13 14:35	03/30/13 04:08	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**463**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:49	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**373**	ug/L	100	76.8	1		03/31/13 05:43	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 05:43	994-05-8	
Benzene	**101**	ug/L	5.0	1.7	1		03/31/13 05:43	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 05:43	624-95-3	
tert-Butyl Alcohol	**821**	ug/L	100	57.7	1		03/31/13 05:43	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 05:43	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 05:43	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 05:43	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 05:43	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 05:43	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 05:43	637-92-3	
Methyl-tert-butyl ether	**1430**	ug/L	100	34.0	20		04/01/13 16:44	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 05:43	91-20-3	
Toluene	**3.2J**	ug/L	5.0	1.6	1		03/31/13 05:43	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 05:43	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 05:43	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		03/31/13 05:43	460-00-4	
Dibromofluoromethane (S)	104	%	70-130		1		03/31/13 05:43	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/31/13 05:43	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		03/31/13 05:43	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS6 **Lab ID: 92152829006** Collected: 03/25/13 14:40 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.022	0.022	1	03/29/13 14:35	03/30/13 04:28	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	03/29/13 14:35	03/30/13 04:28	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**8190**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:52	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**116**	ug/L	100	76.8	1		03/31/13 05:59	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 05:59	994-05-8	
Benzene	**5.4**	ug/L	5.0	1.7	1		03/31/13 05:59	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 05:59	624-95-3	
tert-Butyl Alcohol	**1360**	ug/L	100	57.7	1		03/31/13 05:59	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 05:59	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 05:59	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 05:59	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 05:59	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 05:59	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 05:59	637-92-3	
Methyl-tert-butyl ether	**15.8**	ug/L	5.0	1.7	1		03/31/13 05:59	1634-04-4	
Naphthalene	**2.5J**	ug/L	5.0	2.0	1		03/31/13 05:59	91-20-3	
Toluene	**1.9J**	ug/L	5.0	1.6	1		03/31/13 05:59	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 05:59	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 05:59	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		03/31/13 05:59	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		03/31/13 05:59	1868-53-7	
1,2-Dichloroethane-d4 (S)	102	%	70-130		1		03/31/13 05:59	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		03/31/13 05:59	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS7 **Lab ID: 92152829007** Collected: 03/25/13 16:10 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.027	0.027	1	03/29/13 14:36	03/30/13 04:48	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	87	%	60-140		1	03/29/13 14:36	03/30/13 04:48	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**6860**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:55	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 06:15	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 06:15	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 06:15	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 06:15	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 06:15	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 06:15	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 06:15	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 06:15	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 06:15	64-17-5	
Ethylbenzene	**2.2J**	ug/L	5.0	1.6	1		03/31/13 06:15	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 06:15	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 06:15	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 06:15	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 06:15	108-88-3	
m&p-Xylene	**5.8J**	ug/L	10.0	3.1	1		03/31/13 06:15	179601-23-1	
o-Xylene	**2.5J**	ug/L	5.0	1.6	1		03/31/13 06:15	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		03/31/13 06:15	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		03/31/13 06:15	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/31/13 06:15	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		03/31/13 06:15	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS8 **Lab ID: 92152829008** Collected: 03/25/13 16:35 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.022	0.022	1	03/29/13 14:36	03/30/13 05:08	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	82	%	60-140		1	03/29/13 14:36	03/30/13 05:08	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**429**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 16:59	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 06:30	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 06:30	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 06:30	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 06:30	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 06:30	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 06:30	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 06:30	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 06:30	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 06:30	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 06:30	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 06:30	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 06:30	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 06:30	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 06:30	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 06:30	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 06:30	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		03/31/13 06:30	460-00-4	
Dibromofluoromethane (S)	102	%	70-130		1		03/31/13 06:30	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/31/13 06:30	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		03/31/13 06:30	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-VFS1 **Lab ID: 92152829009** Collected: 03/25/13 12:00 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:36	03/30/13 05:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	93	%	60-140		1	03/29/13 14:36	03/30/13 05:29	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**191**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:02	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 06:46	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 06:46	994-05-8	
Benzene	**78.1**	ug/L	5.0	1.7	1		03/31/13 06:46	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 06:46	624-95-3	
tert-Butyl Alcohol	**67.1J**	ug/L	100	57.7	1		03/31/13 06:46	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 06:46	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 06:46	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 06:46	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 06:46	64-17-5	
Ethylbenzene	**313**	ug/L	25.0	8.0	5		04/01/13 15:42	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 06:46	637-92-3	
Methyl-tert-butyl ether	**7.3**	ug/L	5.0	1.7	1		03/31/13 06:46	1634-04-4	
Naphthalene	**106**	ug/L	5.0	2.0	1		03/31/13 06:46	91-20-3	
Toluene	**78.3**	ug/L	5.0	1.6	1		03/31/13 06:46	108-88-3	
m&p-Xylene	**841**	ug/L	50.0	15.5	5		04/01/13 15:42	179601-23-1	
o-Xylene	**242**	ug/L	25.0	8.0	5		04/01/13 15:42	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		03/31/13 06:46	460-00-4	
Dibromofluoromethane (S)	98	%	70-130		1		03/31/13 06:46	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130		1		03/31/13 06:46	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		03/31/13 06:46	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-VFS2 **Lab ID: 92152829010** Collected: 03/25/13 13:20 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/29/13 14:36	03/30/13 06:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	91	%	60-140		1	03/29/13 14:36	03/30/13 06:29	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**394**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:05	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		04/01/13 15:11	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		04/01/13 15:11	994-05-8	
Benzene	**4.9J**	ug/L	5.0	1.7	1		04/01/13 15:11	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		04/01/13 15:11	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		04/01/13 15:11	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		04/01/13 15:11	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		04/01/13 15:11	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		04/01/13 15:11	108-20-3	
Ethanol	ND	ug/L	200	138	1		04/01/13 15:11	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/01/13 15:11	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		04/01/13 15:11	637-92-3	
Methyl-tert-butyl ether	**25.5**	ug/L	5.0	1.7	1		04/01/13 15:11	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/01/13 15:11	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		04/01/13 15:11	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/01/13 15:11	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/01/13 15:11	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		04/01/13 15:11	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		04/01/13 15:11	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		04/01/13 15:11	17060-07-0	
Toluene-d8 (S)	104	%	70-130		1		04/01/13 15:11	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS9 **Lab ID: 92152829011** Collected: 03/26/13 07:55 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:39	03/30/13 07:09	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	66	%	60-140		1	03/29/13 14:39	03/30/13 07:09	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**691**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:18	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 07:18	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 07:18	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 07:18	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 07:18	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 07:18	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 07:18	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 07:18	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:18	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 07:18	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 07:18	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 07:18	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:18	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 07:18	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 07:18	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 07:18	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 07:18	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		03/31/13 07:18	460-00-4	
Dibromofluoromethane (S)	103	%	70-130		1		03/31/13 07:18	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/31/13 07:18	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		03/31/13 07:18	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS10 **Lab ID: 92152829012** Collected: 03/26/13 08:20 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.023	0.023	1	03/29/13 14:39	03/30/13 07:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	03/29/13 14:39	03/30/13 07:29	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**2130**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:21	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 07:33	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 07:33	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 07:33	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 07:33	624-95-3	
tert-Butyl Alcohol	**365**	ug/L	100	57.7	1		03/31/13 07:33	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 07:33	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 07:33	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:33	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 07:33	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 07:33	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 07:33	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:33	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 07:33	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 07:33	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 07:33	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 07:33	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		03/31/13 07:33	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		1		03/31/13 07:33	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	70-130		1		03/31/13 07:33	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		03/31/13 07:33	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS11 **Lab ID: 92152829013** Collected: 03/26/13 08:50 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:39	03/30/13 07:49	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	88	%	60-140		1	03/29/13 14:39	03/30/13 07:49	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**2240**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:24	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 07:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 07:49	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 07:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 07:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 07:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 07:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 07:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:49	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 07:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 07:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 07:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 07:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 07:49	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 07:49	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 07:49	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 07:49	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		03/31/13 07:49	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		03/31/13 07:49	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		03/31/13 07:49	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		03/31/13 07:49	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS12 **Lab ID: 92152829014** Collected: 03/26/13 09:15 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/29/13 14:39	03/30/13 08:09	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	03/29/13 14:39	03/30/13 08:09	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**7030**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:27	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 08:05	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 08:05	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 08:05	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 08:05	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 08:05	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 08:05	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 08:05	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:05	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 08:05	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 08:05	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 08:05	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:05	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 08:05	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 08:05	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 08:05	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 08:05	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		1		03/31/13 08:05	460-00-4	
Dibromofluoromethane (S)	111	%	70-130		1		03/31/13 08:05	1868-53-7	
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		03/31/13 08:05	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		03/31/13 08:05	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS13 **Lab ID: 92152829015** Collected: 03/26/13 10:05 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:39	03/30/13 08:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	03/29/13 14:39	03/30/13 08:29	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**676**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:31	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 08:21	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 08:21	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 08:21	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 08:21	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 08:21	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 08:21	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 08:21	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:21	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 08:21	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 08:21	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 08:21	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:21	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 08:21	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 08:21	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 08:21	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 08:21	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		03/31/13 08:21	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		1		03/31/13 08:21	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/31/13 08:21	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		03/31/13 08:21	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS14 **Lab ID: 92152829016** Collected: 03/26/13 10:30 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:39	03/30/13 08:49	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	79	%	60-140		1	03/29/13 14:39	03/30/13 08:49	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**899**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:34	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 08:36	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 08:36	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 08:36	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 08:36	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 08:36	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 08:36	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 08:36	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:36	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 08:36	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 08:36	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 08:36	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:36	1634-04-4	
Naphthalene	**2.2J**	ug/L	5.0	2.0	1		03/31/13 08:36	91-20-3	
Toluene	**2.5J**	ug/L	5.0	1.6	1		03/31/13 08:36	108-88-3	
m&p-Xylene	**3.7J**	ug/L	10.0	3.1	1		03/31/13 08:36	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 08:36	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		03/31/13 08:36	460-00-4	
Dibromofluoromethane (S)	105	%	70-130		1		03/31/13 08:36	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/31/13 08:36	17060-07-0	
Toluene-d8 (S)	104	%	70-130		1		03/31/13 08:36	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS15 **Lab ID: 92152829017** Collected: 03/26/13 10:50 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:39	03/30/13 09:09	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	03/29/13 14:39	03/30/13 09:09	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**534**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:37	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 08:52	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 08:52	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 08:52	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 08:52	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 08:52	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 08:52	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 08:52	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:52	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 08:52	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 08:52	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 08:52	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 08:52	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 08:52	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 08:52	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 08:52	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 08:52	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		1		03/31/13 08:52	460-00-4	
Dibromofluoromethane (S)	105	%	70-130		1		03/31/13 08:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/31/13 08:52	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		03/31/13 08:52	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-FS16 **Lab ID: 92152829018** Collected: 03/26/13 13:15 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	03/29/13 14:39	03/30/13 09:30	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	84	%	60-140		1	03/29/13 14:39	03/30/13 09:30	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**588**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:41	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 09:08	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 09:08	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 09:08	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 09:08	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 09:08	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 09:08	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 09:08	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:08	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 09:08	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 09:08	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 09:08	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:08	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 09:08	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 09:08	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 09:08	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 09:08	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		03/31/13 09:08	460-00-4	
Dibromofluoromethane (S)	104	%	70-130		1		03/31/13 09:08	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		03/31/13 09:08	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		03/31/13 09:08	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-VFS3 **Lab ID: 92152829019** Collected: 03/26/13 11:05 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	03/29/13 14:40	03/30/13 09:50	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	88	%	60-140		1	03/29/13 14:40	03/30/13 09:50	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**414**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:44	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 09:24	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 09:24	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 09:24	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 09:24	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 09:24	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 09:24	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 09:24	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:24	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 09:24	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 09:24	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 09:24	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:24	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 09:24	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 09:24	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 09:24	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 09:24	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		03/31/13 09:24	460-00-4	
Dibromofluoromethane (S)	109	%	70-130		1		03/31/13 09:24	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		03/31/13 09:24	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		03/31/13 09:24	2037-26-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Sample: 02567-VFS4 **Lab ID: 92152829020** Collected: 03/26/13 13:30 Received: 03/28/13 15:55 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	03/29/13 14:40	03/30/13 10:10	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	91	%	60-140		1	03/29/13 14:40	03/30/13 10:10	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**296**	ug/L	50.0	40.0	10	03/30/13 13:20	03/31/13 17:47	7439-92-1	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		03/31/13 09:39	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		03/31/13 09:39	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		03/31/13 09:39	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		03/31/13 09:39	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		03/31/13 09:39	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		03/31/13 09:39	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		03/31/13 09:39	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:39	108-20-3	
Ethanol	ND	ug/L	200	138	1		03/31/13 09:39	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		03/31/13 09:39	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		03/31/13 09:39	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		03/31/13 09:39	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		03/31/13 09:39	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		03/31/13 09:39	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		03/31/13 09:39	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		03/31/13 09:39	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		03/31/13 09:39	460-00-4	
Dibromofluoromethane (S)	104	%	70-130		1		03/31/13 09:39	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		03/31/13 09:39	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		03/31/13 09:39	2037-26-5	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: MPRP/12952 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 92152829001, 92152829002, 92152829003, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829010, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

METHOD BLANK: 948054 Matrix: Water
Associated Lab Samples: 92152829001, 92152829002, 92152829003, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829010, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	03/31/13 16:13	

LABORATORY CONTROL SAMPLE: 948055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	492	98	80-120	

MATRIX SPIKE SAMPLE: 948056

Parameter	Units	92152829001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	1350	500	1830	96	75-125	

SAMPLE DUPLICATE: 948057

Parameter	Units	92152829002 Result	Dup Result	RPD	Max RPD	Qualifiers
Lead	ug/L	1160	1150	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: MSV/22490 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92152829002, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

METHOD BLANK: 948136 Matrix: Water
Associated Lab Samples: 92152829002, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	03/31/13 03:06	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	03/31/13 03:06	
Benzene	ug/L	ND	5.0	03/31/13 03:06	
Diisopropyl ether	ug/L	ND	5.0	03/31/13 03:06	
Ethanol	ug/L	ND	200	03/31/13 03:06	
Ethyl-tert-butyl ether	ug/L	ND	10.0	03/31/13 03:06	
Ethylbenzene	ug/L	ND	5.0	03/31/13 03:06	
m&p-Xylene	ug/L	ND	10.0	03/31/13 03:06	
Methyl-tert-butyl ether	ug/L	ND	5.0	03/31/13 03:06	
Naphthalene	ug/L	ND	5.0	03/31/13 03:06	
o-Xylene	ug/L	ND	5.0	03/31/13 03:06	
tert-Amyl Alcohol	ug/L	ND	100	03/31/13 03:06	
tert-Amylmethyl ether	ug/L	ND	10.0	03/31/13 03:06	
tert-Butyl Alcohol	ug/L	ND	100	03/31/13 03:06	
tert-Butyl Formate	ug/L	ND	50.0	03/31/13 03:06	
Toluene	ug/L	ND	5.0	03/31/13 03:06	
1,2-Dichloroethane-d4 (S)	%	97	70-130	03/31/13 03:06	
4-Bromofluorobenzene (S)	%	94	70-130	03/31/13 03:06	
Dibromofluoromethane (S)	%	96	70-130	03/31/13 03:06	
Toluene-d8 (S)	%	97	70-130	03/31/13 03:06	

LABORATORY CONTROL SAMPLE: 948137

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	41.1	82	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	964	96	70-130	
Benzene	ug/L	50	46.3	93	70-130	
Diisopropyl ether	ug/L	50	50.0	100	70-130	
Ethanol	ug/L	2000	2350	117	70-130	
Ethyl-tert-butyl ether	ug/L	100	83.7	84	70-130	
Ethylbenzene	ug/L	50	46.7	93	70-130	
m&p-Xylene	ug/L	100	89.6	90	70-130	
Methyl-tert-butyl ether	ug/L	50	47.3	95	70-130	
Naphthalene	ug/L	50	49.8	100	70-130	
o-Xylene	ug/L	50	45.6	91	70-130	
tert-Amyl Alcohol	ug/L	1000	929	93	70-130	
tert-Amylmethyl ether	ug/L	100	94.7	95	70-130	
tert-Butyl Alcohol	ug/L	500	507	101	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

LABORATORY CONTROL SAMPLE: 948137

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butyl Formate	ug/L	400	376	94	70-130	
Toluene	ug/L	50	47.3	95	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Dibromofluoromethane (S)	%			95	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 948138 948139

Parameter	Units	92152829009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane	ug/L	ND	250	250	230	256	92	102	70-130	11	30	
3,3-Dimethyl-1-Butanol	ug/L	ND	5000	5000	5780	6560	116	131	70-130	13	30	M0
Benzene	ug/L	78.1	250	250	298	309	88	93	70-130	4	30	
Diisopropyl ether	ug/L	ND	250	250	272	309	109	124	70-130	13	30	
Ethanol	ug/L	ND	10000	10000	13000	21200	130	212	70-130	48	30	M0,R1
Ethyl-tert-butyl ether	ug/L	ND	500	500	465	530	93	106	70-130	13	30	
Ethylbenzene	ug/L	313	250	250	566	552	101	96	70-130	2	30	
m&p-Xylene	ug/L	841	500	500	1330	1340	98	99	70-130	0	30	
Methyl-tert-butyl ether	ug/L	7.3	250	250	283	300	110	117	70-130	6	30	
Naphthalene	ug/L	106	250	250	399	413	117	123	70-130	4	30	
o-Xylene	ug/L	242	250	250	487	515	98	110	70-130	6	30	
tert-Amyl Alcohol	ug/L	ND	5000	5000	6040	7330	121	146	70-130	19	30	M0
tert-Amylmethyl ether	ug/L	ND	500	500	520	552	104	110	70-130	6	30	
tert-Butyl Alcohol	ug/L	67.1J	2500	2500	4600	6130	181	242	70-130	28	30	M0
tert-Butyl Formate	ug/L	ND	2000	2000	348	371	17	19	70-130	6	30	P5
Toluene	ug/L	78.3	250	250	324	341	98	105	70-130	5	30	
1,2-Dichloroethane-d4 (S)	%						88	93	70-130			
4-Bromofluorobenzene (S)	%						102	99	70-130			
Dibromofluoromethane (S)	%						96	99	70-130			
Toluene-d8 (S)	%						100	102	70-130			

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: MSV/22491
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92152829003

METHOD BLANK: 948140
Matrix: Water
Associated Lab Samples: 92152829003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	03/31/13 02:51	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	03/31/13 02:51	
Benzene	ug/L	ND	5.0	03/31/13 02:51	
Diisopropyl ether	ug/L	ND	5.0	03/31/13 02:51	
Ethanol	ug/L	ND	200	03/31/13 02:51	
Ethyl-tert-butyl ether	ug/L	ND	10.0	03/31/13 02:51	
Ethylbenzene	ug/L	ND	5.0	03/31/13 02:51	
m&p-Xylene	ug/L	ND	10.0	03/31/13 02:51	
Methyl-tert-butyl ether	ug/L	ND	5.0	03/31/13 02:51	
Naphthalene	ug/L	ND	5.0	03/31/13 02:51	
o-Xylene	ug/L	ND	5.0	03/31/13 02:51	
tert-Amyl Alcohol	ug/L	ND	100	03/31/13 02:51	
tert-Amylmethyl ether	ug/L	ND	10.0	03/31/13 02:51	
tert-Butyl Alcohol	ug/L	ND	100	03/31/13 02:51	
tert-Butyl Formate	ug/L	ND	50.0	03/31/13 02:51	
Toluene	ug/L	ND	5.0	03/31/13 02:51	
1,2-Dichloroethane-d4 (S)	%	103	70-130	03/31/13 02:51	
4-Bromofluorobenzene (S)	%	98	70-130	03/31/13 02:51	
Dibromofluoromethane (S)	%	106	70-130	03/31/13 02:51	
Toluene-d8 (S)	%	104	70-130	03/31/13 02:51	

LABORATORY CONTROL SAMPLE: 948141

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	43.0	86	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	983	98	70-130	
Benzene	ug/L	50	45.3	91	70-130	
Diisopropyl ether	ug/L	50	51.0	102	70-130	
Ethanol	ug/L	2000	2530	127	70-130	
Ethyl-tert-butyl ether	ug/L	100	85.6	86	70-130	
Ethylbenzene	ug/L	50	44.7	89	70-130	
m&p-Xylene	ug/L	100	87.0	87	70-130	
Methyl-tert-butyl ether	ug/L	50	47.1	94	70-130	
Naphthalene	ug/L	50	46.5	93	70-130	
o-Xylene	ug/L	50	44.6	89	70-130	
tert-Amyl Alcohol	ug/L	1000	1030	103	70-130	
tert-Amylmethyl ether	ug/L	100	94.1	94	70-130	
tert-Butyl Alcohol	ug/L	500	552	110	70-130	
tert-Butyl Formate	ug/L	400	373	93	70-130	
Toluene	ug/L	50	46.5	93	70-130	
1,2-Dichloroethane-d4 (S)	%			102	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

LABORATORY CONTROL SAMPLE: 948141

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			96	70-130	
Dibromofluoromethane (S)	%			96	70-130	
Toluene-d8 (S)	%			100	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: MSV/22507
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92152829010

METHOD BLANK: 948448
Matrix: Water
Associated Lab Samples: 92152829010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/01/13 14:08	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/01/13 14:08	
Benzene	ug/L	ND	5.0	04/01/13 14:08	
Diisopropyl ether	ug/L	ND	5.0	04/01/13 14:08	
Ethanol	ug/L	ND	200	04/01/13 14:08	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/01/13 14:08	
Ethylbenzene	ug/L	ND	5.0	04/01/13 14:08	
m&p-Xylene	ug/L	ND	10.0	04/01/13 14:08	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/01/13 14:08	
Naphthalene	ug/L	ND	5.0	04/01/13 14:08	
o-Xylene	ug/L	ND	5.0	04/01/13 14:08	
tert-Amyl Alcohol	ug/L	ND	100	04/01/13 14:08	
tert-Amylmethyl ether	ug/L	ND	10.0	04/01/13 14:08	
tert-Butyl Alcohol	ug/L	ND	100	04/01/13 14:08	
tert-Butyl Formate	ug/L	ND	50.0	04/01/13 14:08	
Toluene	ug/L	ND	5.0	04/01/13 14:08	
1,2-Dichloroethane-d4 (S)	%	102	70-130	04/01/13 14:08	
4-Bromofluorobenzene (S)	%	99	70-130	04/01/13 14:08	
Dibromofluoromethane (S)	%	104	70-130	04/01/13 14:08	
Toluene-d8 (S)	%	101	70-130	04/01/13 14:08	

LABORATORY CONTROL SAMPLE: 948449

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	43.6	87	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1140	114	70-130	
Benzene	ug/L	50	45.7	91	70-130	
Diisopropyl ether	ug/L	50	53.0	106	70-130	
Ethanol	ug/L	2000	3870	193	70-130	L3
Ethyl-tert-butyl ether	ug/L	100	88.9	89	70-130	
Ethylbenzene	ug/L	50	43.2	86	70-130	
m&p-Xylene	ug/L	100	86.4	86	70-130	
Methyl-tert-butyl ether	ug/L	50	48.4	97	70-130	
Naphthalene	ug/L	50	45.0	90	70-130	
o-Xylene	ug/L	50	44.5	89	70-130	
tert-Amyl Alcohol	ug/L	1000	1130	113	70-130	
tert-Amylmethyl ether	ug/L	100	91.9	92	70-130	
tert-Butyl Alcohol	ug/L	500	729	146	70-130	L0
tert-Butyl Formate	ug/L	400	359	90	70-130	
Toluene	ug/L	50	46.2	92	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

LABORATORY CONTROL SAMPLE: 948449

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			103	70-130	
Dibromofluoromethane (S)	%			97	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 948450 948451

Parameter	Units	92152656001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	49.9	46.8	100	94	70-130	6	30	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1090	1040	109	104	70-130	5	30	
Benzene	ug/L	ND	50	50	55.8	54.3	112	109	70-130	3	30	
Diisopropyl ether	ug/L	ND	50	50	54.4	55.2	109	110	70-130	1	30	
Ethanol	ug/L	ND	2000	2000	1160	1100	58	55	70-130	5	30	M0
Ethyl-tert-butyl ether	ug/L	ND	100	100	102	97.2	102	97	70-130	5	30	
Ethylbenzene	ug/L	ND	50	50	57.8	55.8	116	112	70-130	3	30	
m&p-Xylene	ug/L	ND	100	100	112	108	112	108	70-130	4	30	
Methyl-tert-butyl ether	ug/L	ND	50	50	55.7	54.7	111	109	70-130	2	30	
Naphthalene	ug/L	ND	50	50	60.8	58.7	122	117	70-130	4	30	
o-Xylene	ug/L	ND	50	50	59.0	54.2	118	108	70-130	8	30	
tert-Amyl Alcohol	ug/L	ND	1000	1000	870	868	87	87	70-130	0	30	
tert-Amylmethyl ether	ug/L	ND	100	100	105	107	105	107	70-130	1	30	
tert-Butyl Alcohol	ug/L	ND	500	500	651	602	130	120	70-130	8	30	
tert-Butyl Formate	ug/L	ND	400	400	15.7J	ND	4	1	70-130		30	P5
Toluene	ug/L	ND	50	50	54.9	54.7	110	109	70-130	0	30	
1,2-Dichloroethane-d4 (S)	%						96	92	70-130			
4-Bromofluorobenzene (S)	%						99	94	70-130			
Dibromofluoromethane (S)	%						101	97	70-130			
Toluene-d8 (S)	%						97	101	70-130			

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: MSV/22530
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92152829001

METHOD BLANK: 949542
Matrix: Water
Associated Lab Samples: 92152829001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/03/13 00:01	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/03/13 00:01	
Benzene	ug/L	ND	5.0	04/03/13 00:01	
Diisopropyl ether	ug/L	ND	5.0	04/03/13 00:01	
Ethanol	ug/L	ND	200	04/03/13 00:01	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/03/13 00:01	
Ethylbenzene	ug/L	ND	5.0	04/03/13 00:01	
m&p-Xylene	ug/L	ND	10.0	04/03/13 00:01	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/03/13 00:01	
Naphthalene	ug/L	ND	5.0	04/03/13 00:01	
o-Xylene	ug/L	ND	5.0	04/03/13 00:01	
tert-Amyl Alcohol	ug/L	ND	100	04/03/13 00:01	
tert-Amylmethyl ether	ug/L	ND	10.0	04/03/13 00:01	
tert-Butyl Alcohol	ug/L	ND	100	04/03/13 00:01	
tert-Butyl Formate	ug/L	ND	50.0	04/03/13 00:01	
Toluene	ug/L	ND	5.0	04/03/13 00:01	
1,2-Dichloroethane-d4 (S)	%	102	70-130	04/03/13 00:01	
4-Bromofluorobenzene (S)	%	99	70-130	04/03/13 00:01	
Dibromofluoromethane (S)	%	101	70-130	04/03/13 00:01	
Toluene-d8 (S)	%	99	70-130	04/03/13 00:01	

LABORATORY CONTROL SAMPLE: 949543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	42.2	84	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1080	108	70-130	
Benzene	ug/L	50	45.5	91	70-130	
Diisopropyl ether	ug/L	50	48.5	97	70-130	
Ethanol	ug/L	2000	2030	102	70-130	
Ethyl-tert-butyl ether	ug/L	100	84.9	85	70-130	
Ethylbenzene	ug/L	50	46.7	93	70-130	
m&p-Xylene	ug/L	100	87.5	87	70-130	
Methyl-tert-butyl ether	ug/L	50	50.3	101	70-130	
Naphthalene	ug/L	50	50.0	100	70-130	
o-Xylene	ug/L	50	46.5	93	70-130	
tert-Amyl Alcohol	ug/L	1000	970	97	70-130	
tert-Amylmethyl ether	ug/L	100	93.9	94	70-130	
tert-Butyl Alcohol	ug/L	500	501	100	70-130	
tert-Butyl Formate	ug/L	400	402	100	70-130	
Toluene	ug/L	50	45.8	92	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

LABORATORY CONTROL SAMPLE: 949543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

QC Batch: OEXT/21390 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92152829001, 92152829002, 92152829003, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829010, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

METHOD BLANK: 947726 Matrix: Water
Associated Lab Samples: 92152829001, 92152829002, 92152829003, 92152829004, 92152829005, 92152829006, 92152829007, 92152829008, 92152829009, 92152829010, 92152829011, 92152829012, 92152829013, 92152829014, 92152829015, 92152829016, 92152829017, 92152829018, 92152829019, 92152829020

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.019	03/30/13 01:48	
1-Chloro-2-bromopropane (S)	%	84	60-140	03/30/13 01:48	

LABORATORY CONTROL SAMPLE & LCSD: 947727 947728

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.25	0.27	90	94	60-140	6	20	
1-Chloro-2-bromopropane (S)	%				87	91	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 947729 947730

Parameter	Units	92152829009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.29	.29	0.27	0.29	94	102	60-140	8	20	
1-Chloro-2-bromopropane (S)	%						94	97	60-140			

SAMPLE DUPLICATE: 947731

Parameter	Units	92152829010 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	91	93	6		

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92152829001	**02567-FS1**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829002	**02567-FS2**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829003	**02567-FS3**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829004	**02567-FS4**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829005	**02567-FS5**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829006	**02567-FS6**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829007	**02567-FS7**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829008	**02567-FS8**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829009	**02567-VFS1**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829010	**02567-VFS2**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829011	**02567-FS9**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829012	**02567-FS10**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829013	**02567-FS11**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829014	**02567-FS12**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829015	**02567-FS13**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829016	**02567-FS14**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829017	**02567-FS15**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829018	**02567-FS16**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829019	**02567-VFS3**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829020	**02567-VFS4**	EPA 8011	OEXT/21390	EPA 8011	GCSV/14264
92152829001	**02567-FS1**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829002	**02567-FS2**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829003	**02567-FS3**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829004	**02567-FS4**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829005	**02567-FS5**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829006	**02567-FS6**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829007	**02567-FS7**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829008	**02567-FS8**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829009	**02567-VFS1**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829010	**02567-VFS2**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829011	**02567-FS9**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829012	**02567-FS10**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829013	**02567-FS11**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829014	**02567-FS12**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829015	**02567-FS13**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829016	**02567-FS14**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829017	**02567-FS15**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829018	**02567-FS16**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829019	**02567-VFS3**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829020	**02567-VFS4**	EPA 3010	MPRP/12952	EPA 6010	ICP/11805
92152829001	**02567-FS1**	EPA 8260	MSV/22530		
92152829002	**02567-FS2**	EPA 8260	MSV/22490		
92152829003	**02567-FS3**	EPA 8260	MSV/22491		
92152829004	**02567-FS4**	EPA 8260	MSV/22490		
92152829005	**02567-FS5**	EPA 8260	MSV/22490		
92152829006	**02567-FS6**	EPA 8260	MSV/22490		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RHODES WAY NORTH 14-215-778
Pace Project No.: 92152829

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92152829007	**02567-FS7**	EPA 8260	MSV/22490		
92152829008	**02567-FS8**	EPA 8260	MSV/22490		
92152829009	**02567-VFS1**	EPA 8260	MSV/22490		
92152829010	**02567-VFS2**	EPA 8260	MSV/22507		
92152829011	**02567-FS9**	EPA 8260	MSV/22490		
92152829012	**02567-FS10**	EPA 8260	MSV/22490		
92152829013	**02567-FS11**	EPA 8260	MSV/22490		
92152829014	**02567-FS12**	EPA 8260	MSV/22490		
92152829015	**02567-FS13**	EPA 8260	MSV/22490		
92152829016	**02567-FS14**	EPA 8260	MSV/22490		
92152829017	**02567-FS15**	EPA 8260	MSV/22490		
92152829018	**02567-FS16**	EPA 8260	MSV/22490		
92152829019	**02567-VFS3**	EPA 8260	MSV/22490		
92152829020	**02567-VFS4**	EPA 8260	MSV/22490		

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Pace Analytical	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: March 15, 2013 Page 1 of 2
	Document Number: **F-CHR-CS-03-rev.10**	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1101 (T1102) **Type of Ice:** (Wet) Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor **T1101**: No Correction **T1102**: No Correction

Corrected Cooler Temp.: 0.1 C **Biological Tissue is Frozen:** Yes No (N/A)

Temp should be above freezing to 6°C **Comments:**

Date and Initials of person examining contents: JAB 03/28/13

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: KLH **Date:** 3/28/13

SRF Review: KLH **Date:** 3/29/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 92152829

92152829

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1671411

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13537 S POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ECS
		Address: AGAWAM MA
Email To: BSchaefer@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704 583-2741 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: Kevin Herring
Requested Due Date/TAT: 3-DAY	Project Number: 14-215778	Pace Profile #: 3385-1

REGULATORY AGENCY

- ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
- ☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX MTN	1,2 DCA	Oxygenates	8011 EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92152829
1	02567-FS1	WT	C			3/25	1145		7			X	X						X	X	X	X	X		W1
2	02567-FS2						1220																		W2
3	02567-FS3						1240																		W3
4	02567-FS4						1305																		W4
5	02567-FS5						~~1320~~ 1510																		W5
6	02567-FS6						1440																		W6
7	02567-FS7						1610																		W7
8	02567-FS8						1635																		W8
9	02567-VFS1						1200																		W9
10	02567-VFS2						1320																		W10
11	02567-FS9					3/26	755																		W11
12	02567-FS10					3/26	820																		W12

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Report J VAlues	Phil Pike / ECS	3/26/13	1745	ECS OFFICE	3/26/13	1745				
	ECS OFFICE			G Moody - Pace	3-28-13	9:00	0.1			
	G Moody	3-28-13	15:55	[signature]	3-28-13	1555	0.1	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 3/26/13

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1667789

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13504 S POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ~~AGAWAM~~ ECS
		Address: AGAWAM MA
Email To: BSchaefer@ECSCONSULTING.COM	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-2714 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: Kevin Herring
Requested Due Date/TAT: ~~5~~ 3-DAY	Project Number: 14.215778	Pace Profile #:

REGULATORY AGENCY

- ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
- ☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Halo BTEX MEN	1,2 DCA	Oxygenates	Soil EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92152829
1	02567-FS 11	WT	C			3/26	850		7			X	X						X	X	Y	X	X		013
2	02567-FS 12						915																		014
3	02567-FS 13						1005																		015
4	02567-FS 14						1030																		016
5	02567-FS 15						1050																		017
6	02567-FS 16						1315																		018
7	02567-VFS 3						1105																		019
8	02567-VFS 4						1330																		020
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Report J values	[signature] / ECS	3/26/13	1745	ECS OFFICE	3/26/13	1745				
	ECS OFFICE			[signature] - Pace	3-28-13	9:00				
	[signature]	3-28-13	15:55	[signature] / Pace	3-28-13	1355	0.1	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 3/26/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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(704)875-9092

April 26, 2013

Mr. Brett Schaefer
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Dear Mr. Schaefer:
Enclosed are the analytical results for sample(s) received by the laboratory on April 19, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92155248001	**02567-MW-7**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248002	**02567-RW-3**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248003	**02567-RW-2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248004	**02567-RW-1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248005	**02567-MW-13**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248006	**02567-MW-10**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248007	**02567-MW-11**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248008	**02567-MW-9**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248009	**02567-MW-8**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248010	**02567-MW-2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248011	**02567-MW-3**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248012	**TRIP BLANK**	EPA 8260	MCK	20	PASI-C
92155248013	**02567-MW-4**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C

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(704)875-9092

SAMPLE ANALYTE COUNT

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92155248014	**02567-MW-6**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248015	**FIELD BLANK 1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248016	**FIELD BLANK 2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248017	**02567-TW-1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248018	**02567-MW-5**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248019	**02567-TW-2**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248020	**02567-MW-14**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248021	**02567-MW-15**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248022	**02567-MW-16**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248023	**DUPLICATE 1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C
92155248024	**TRIP BLANK**	EPA 8260	MCK	20	PASI-C
92155248025	**02567-MW-14-2**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248026	**02567-MW-15-2**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248027	**02567-MW-16-2**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92155248028	**02567-TM-2-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248029	**02567-TW-1-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248031	**02567-RW-1-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248032	**02567-RW-2-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92155248033	**02567-RW-3-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92155248034	**02567-MW-17-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92155248036	**02567-WSW-1**	EPA 8011	NU1	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	MCK	20	PASI-C

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-7 **Lab ID: 92155248001** Collected: 04/17/13 11:15 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/22/13 11:51	04/22/13 14:58	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	102	%	60-140	1	04/22/13 11:51	04/22/13 14:58	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**74.2**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:02	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**2270**	ug/L	1000	10		04/23/13 17:53	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	10		04/23/13 17:53	994-05-8	
Benzene	**1010**	ug/L	50.0	10		04/23/13 17:53	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/23/13 17:53	624-95-3	
tert-Butyl Alcohol	**6060**	ug/L	1000	10		04/23/13 17:53	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/23/13 17:53	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/23/13 17:53	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/23/13 17:53	108-20-3	
Ethanol	ND	ug/L	2000	10		04/23/13 17:53	64-17-5	
Ethylbenzene	ND	ug/L	50.0	10		04/23/13 17:53	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/23/13 17:53	637-92-3	
Methyl-tert-butyl ether	**1110**	ug/L	50.0	10		04/23/13 17:53	1634-04-4	
Naphthalene	ND	ug/L	50.0	10		04/23/13 17:53	91-20-3	
Toluene	ND	ug/L	50.0	10		04/23/13 17:53	108-88-3	
m&p-Xylene	ND	ug/L	100	10		04/23/13 17:53	179601-23-1	
o-Xylene	ND	ug/L	50.0	10		04/23/13 17:53	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	98	%	70-130	10		04/23/13 17:53	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	10		04/23/13 17:53	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	10		04/23/13 17:53	17060-07-0	
Toluene-d8 (S)	100	%	70-130	10		04/23/13 17:53	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-3 **Lab ID: 92155248002** Collected: 04/17/13 12:45 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:28	04/21/13 19:50	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	62	%	60-140	1	04/21/13 17:28	04/21/13 19:50	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**52.7**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:05	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	10000	100		04/23/13 18:09	75-85-4	
tert-Amylmethyl ether	ND	ug/L	1000	100		04/23/13 18:09	994-05-8	
Benzene	**2740**	ug/L	500	100		04/23/13 18:09	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	10000	100		04/23/13 18:09	624-95-3	
tert-Butyl Alcohol	**11000**	ug/L	10000	100		04/23/13 18:09	75-65-0	
tert-Butyl Formate	ND	ug/L	5000	100		04/23/13 18:09	762-75-4	
1,2-Dichloroethane	ND	ug/L	500	100		04/23/13 18:09	107-06-2	
Diisopropyl ether	ND	ug/L	500	100		04/23/13 18:09	108-20-3	
Ethanol	ND	ug/L	20000	100		04/23/13 18:09	64-17-5	
Ethylbenzene	**963**	ug/L	500	100		04/23/13 18:09	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	1000	100		04/23/13 18:09	637-92-3	
Methyl-tert-butyl ether	**13500**	ug/L	500	100		04/23/13 18:09	1634-04-4	
Naphthalene	ND	ug/L	500	100		04/23/13 18:09	91-20-3	
Toluene	**2920**	ug/L	500	100		04/23/13 18:09	108-88-3	
m&p-Xylene	**3340**	ug/L	1000	100		04/23/13 18:09	179601-23-1	
o-Xylene	**839**	ug/L	500	100		04/23/13 18:09	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	100		04/23/13 18:09	460-00-4	
Dibromofluoromethane (S)	100	%	70-130	100		04/23/13 18:09	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130	100		04/23/13 18:09	17060-07-0	
Toluene-d8 (S)	102	%	70-130	100		04/23/13 18:09	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-2 **Lab ID: 92155248003** Collected: 04/17/13 13:25 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 20:10	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	97	%	60-140	1	04/21/13 17:29	04/21/13 20:10	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**30.9**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:08	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**2840**	ug/L	1000	10		04/23/13 18:24	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	10		04/23/13 18:24	994-05-8	
Benzene	**962**	ug/L	50.0	10		04/23/13 18:24	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/23/13 18:24	624-95-3	
tert-Butyl Alcohol	**12800**	ug/L	1000	10		04/23/13 18:24	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/23/13 18:24	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/23/13 18:24	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/23/13 18:24	108-20-3	
Ethanol	ND	ug/L	2000	10		04/23/13 18:24	64-17-5	
Ethylbenzene	**200**	ug/L	50.0	10		04/23/13 18:24	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/23/13 18:24	637-92-3	
Methyl-tert-butyl ether	**1260**	ug/L	50.0	10		04/23/13 18:24	1634-04-4	
Naphthalene	**68.0**	ug/L	50.0	10		04/23/13 18:24	91-20-3	
Toluene	**334**	ug/L	50.0	10		04/23/13 18:24	108-88-3	
m&p-Xylene	**586**	ug/L	100	10		04/23/13 18:24	179601-23-1	
o-Xylene	**229**	ug/L	50.0	10		04/23/13 18:24	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	10		04/23/13 18:24	460-00-4	
Dibromofluoromethane (S)	101	%	70-130	10		04/23/13 18:24	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130	10		04/23/13 18:24	17060-07-0	
Toluene-d8 (S)	98	%	70-130	10		04/23/13 18:24	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-1 **Lab ID: 92155248004** Collected: 04/17/13 14:05 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 20:31	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	60	%	60-140	1	04/21/13 17:29	04/21/13 20:31	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**82.1**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:21	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**6580**	ug/L	5000	50		04/23/13 18:40	75-85-4	
tert-Amylmethyl ether	ND	ug/L	500	50		04/23/13 18:40	994-05-8	
Benzene	**2900**	ug/L	250	50		04/23/13 18:40	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	5000	50		04/23/13 18:40	624-95-3	
tert-Butyl Alcohol	**14000**	ug/L	5000	50		04/23/13 18:40	75-65-0	
tert-Butyl Formate	ND	ug/L	2500	50		04/23/13 18:40	762-75-4	
1,2-Dichloroethane	ND	ug/L	250	50		04/23/13 18:40	107-06-2	
Diisopropyl ether	ND	ug/L	250	50		04/23/13 18:40	108-20-3	
Ethanol	ND	ug/L	10000	50		04/23/13 18:40	64-17-5	
Ethylbenzene	**573**	ug/L	250	50		04/23/13 18:40	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	500	50		04/23/13 18:40	637-92-3	
Methyl-tert-butyl ether	**8200**	ug/L	1000	200		04/24/13 15:31	1634-04-4	
Naphthalene	ND	ug/L	250	50		04/23/13 18:40	91-20-3	
Toluene	**3030**	ug/L	250	50		04/23/13 18:40	108-88-3	
m&p-Xylene	**1820**	ug/L	500	50		04/23/13 18:40	179601-23-1	
o-Xylene	**812**	ug/L	250	50		04/23/13 18:40	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	50		04/23/13 18:40	460-00-4	
Dibromofluoromethane (S)	103	%	70-130	50		04/23/13 18:40	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	50		04/23/13 18:40	17060-07-0	
Toluene-d8 (S)	99	%	70-130	50		04/23/13 18:40	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-13 **Lab ID: 92155248005** Collected: 04/17/13 14:50 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	1	04/21/13 17:29	04/21/13 20:51	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	105	%	60-140	1	04/21/13 17:29	04/21/13 20:51	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**15.8**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:24	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	2000	20		04/23/13 20:14	75-85-4	
tert-Amylmethyl ether	ND	ug/L	200	20		04/23/13 20:14	994-05-8	
Benzene	**861**	ug/L	100	20		04/23/13 20:14	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	2000	20		04/23/13 20:14	624-95-3	
tert-Butyl Alcohol	**4610**	ug/L	2000	20		04/23/13 20:14	75-65-0	
tert-Butyl Formate	ND	ug/L	1000	20		04/23/13 20:14	762-75-4	
1,2-Dichloroethane	ND	ug/L	100	20		04/23/13 20:14	107-06-2	
Diisopropyl ether	ND	ug/L	100	20		04/23/13 20:14	108-20-3	
Ethanol	ND	ug/L	4000	20		04/23/13 20:14	64-17-5	
Ethylbenzene	**410**	ug/L	100	20		04/23/13 20:14	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	200	20		04/23/13 20:14	637-92-3	
Methyl-tert-butyl ether	**4640**	ug/L	500	100		04/24/13 15:46	1634-04-4	
Naphthalene	**172**	ug/L	100	20		04/23/13 20:14	91-20-3	
Toluene	ND	ug/L	100	20		04/23/13 20:14	108-88-3	
m&p-Xylene	**844**	ug/L	200	20		04/23/13 20:14	179601-23-1	
o-Xylene	ND	ug/L	100	20		04/23/13 20:14	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	20		04/23/13 20:14	460-00-4	
Dibromofluoromethane (S)	101	%	70-130	20		04/23/13 20:14	1868-53-7	
1,2-Dichloroethane-d4 (S)	102	%	70-130	20		04/23/13 20:14	17060-07-0	
Toluene-d8 (S)	101	%	70-130	20		04/23/13 20:14	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-10 **Lab ID: 92155248006** Collected: 04/17/13 15:15 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 21:11	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	106	%	60-140	1	04/21/13 17:29	04/21/13 21:11	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**23.8**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:28	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**20100**	ug/L	2000	20		04/23/13 20:29	75-85-4	
tert-Amylmethyl ether	ND	ug/L	200	20		04/23/13 20:29	994-05-8	
Benzene	**4280**	ug/L	100	20		04/23/13 20:29	71-43-2	E
3,3-Dimethyl-1-Butanol	ND	ug/L	2000	20		04/23/13 20:29	624-95-3	
tert-Butyl Alcohol	**71100**	ug/L	2000	20		04/23/13 20:29	75-65-0	E
tert-Butyl Formate	ND	ug/L	1000	20		04/23/13 20:29	762-75-4	
1,2-Dichloroethane	ND	ug/L	100	20		04/23/13 20:29	107-06-2	
Diisopropyl ether	ND	ug/L	100	20		04/23/13 20:29	108-20-3	
Ethanol	ND	ug/L	4000	20		04/23/13 20:29	64-17-5	
Ethylbenzene	**710**	ug/L	100	20		04/23/13 20:29	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	200	20		04/23/13 20:29	637-92-3	
Methyl-tert-butyl ether	**14500**	ug/L	2500	500		04/24/13 16:02	1634-04-4	
Naphthalene	**207**	ug/L	100	20		04/23/13 20:29	91-20-3	
Toluene	**286**	ug/L	100	20		04/23/13 20:29	108-88-3	
m&p-Xylene	**2430**	ug/L	200	20		04/23/13 20:29	179601-23-1	
o-Xylene	**259**	ug/L	100	20		04/23/13 20:29	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	20		04/23/13 20:29	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	20		04/23/13 20:29	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	20		04/23/13 20:29	17060-07-0	
Toluene-d8 (S)	102	%	70-130	20		04/23/13 20:29	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-11 **Lab ID: 92155248007** Collected: 04/17/13 15:40 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 21:32	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	108	%	60-140	1	04/21/13 17:29	04/21/13 21:32	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**56.3**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:31	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**8260**	ug/L	1000	10		04/23/13 20:45	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	10		04/23/13 20:45	994-05-8	
Benzene	**19600**	ug/L	1250	250		04/24/13 16:17	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/23/13 20:45	624-95-3	
tert-Butyl Alcohol	**19200**	ug/L	1000	10		04/23/13 20:45	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/23/13 20:45	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/23/13 20:45	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/23/13 20:45	108-20-3	
Ethanol	ND	ug/L	2000	10		04/23/13 20:45	64-17-5	
Ethylbenzene	**2610**	ug/L	1250	250		04/24/13 16:17	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/23/13 20:45	637-92-3	
Methyl-tert-butyl ether	**16800**	ug/L	1250	250		04/24/13 16:17	1634-04-4	
Naphthalene	**462**	ug/L	50.0	10		04/23/13 20:45	91-20-3	
Toluene	**18000**	ug/L	1250	250		04/24/13 16:17	108-88-3	
m&p-Xylene	**8230**	ug/L	2500	250		04/24/13 16:17	179601-23-1	
o-Xylene	**3370**	ug/L	1250	250		04/24/13 16:17	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	10		04/23/13 20:45	460-00-4	
Dibromofluoromethane (S)	99	%	70-130	10		04/23/13 20:45	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130	10		04/23/13 20:45	17060-07-0	
Toluene-d8 (S)	99	%	70-130	10		04/23/13 20:45	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-9 **Lab ID: 92155248008** Collected: 04/17/13 16:05 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 21:52	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	113	%	60-140	1	04/21/13 17:29	04/21/13 21:52	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**88.0**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:34	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**39000**	ug/L	1000	10		04/23/13 21:00	75-85-4	
tert-Amylmethyl ether	**216**	ug/L	100	10		04/23/13 21:00	994-05-8	
Benzene	**13600**	ug/L	5000	1000		04/24/13 16:33	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/23/13 21:00	624-95-3	
tert-Butyl Alcohol	**12100**	ug/L	1000	10		04/23/13 21:00	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/23/13 21:00	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/23/13 21:00	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/23/13 21:00	108-20-3	
Ethanol	ND	ug/L	2000	10		04/23/13 21:00	64-17-5	
Ethylbenzene	**1600**	ug/L	50.0	10		04/23/13 21:00	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/23/13 21:00	637-92-3	
Methyl-tert-butyl ether	**70500**	ug/L	5000	1000		04/24/13 16:33	1634-04-4	
Naphthalene	**617**	ug/L	50.0	10		04/23/13 21:00	91-20-3	
Toluene	**16300**	ug/L	5000	1000		04/24/13 16:33	108-88-3	
m&p-Xylene	**4730**	ug/L	100	10		04/23/13 21:00	179601-23-1	E
o-Xylene	**2130**	ug/L	50.0	10		04/23/13 21:00	95-47-6	E
Surrogates								
4-Bromofluorobenzene (S)	98	%	70-130	10		04/23/13 21:00	460-00-4	
Dibromofluoromethane (S)	99	%	70-130	10		04/23/13 21:00	1868-53-7	
1,2-Dichloroethane-d4 (S)	104	%	70-130	10		04/23/13 21:00	17060-07-0	
Toluene-d8 (S)	100	%	70-130	10		04/23/13 21:00	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-8 **Lab ID: 92155248009** Collected: 04/17/13 16:50 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:29	04/21/13 22:12	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	96	%	60-140	1	04/21/13 17:29	04/21/13 22:12	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**114**	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:37	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**370**	ug/L	100	1		04/23/13 21:16	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 21:16	994-05-8	
Benzene	**122**	ug/L	5.0	1		04/23/13 21:16	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 21:16	624-95-3	
tert-Butyl Alcohol	**816**	ug/L	100	1		04/23/13 21:16	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 21:16	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 21:16	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 21:16	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 21:16	64-17-5	
Ethylbenzene	**17.2**	ug/L	5.0	1		04/23/13 21:16	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 21:16	637-92-3	
Methyl-tert-butyl ether	**185**	ug/L	5.0	1		04/23/13 21:16	1634-04-4	
Naphthalene	**20.3**	ug/L	5.0	1		04/23/13 21:16	91-20-3	
Toluene	**27.5**	ug/L	5.0	1		04/23/13 21:16	108-88-3	
m&p-Xylene	**32.8**	ug/L	10.0	1		04/23/13 21:16	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 21:16	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		04/23/13 21:16	460-00-4	
Dibromofluoromethane (S)	101	%	70-130	1		04/23/13 21:16	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/23/13 21:16	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/23/13 21:16	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-2 **Lab ID: 92155248010** Collected: 04/17/13 17:05 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:30	04/21/13 23:13	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	102	%	60-140	1	04/21/13 17:30	04/21/13 23:13	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	04/20/13 12:15	04/23/13 22:41	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**131**	ug/L	100	1		04/23/13 21:32	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 21:32	994-05-8	
Benzene	**27.5**	ug/L	5.0	1		04/23/13 21:32	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 21:32	624-95-3	
tert-Butyl Alcohol	**161**	ug/L	100	1		04/23/13 21:32	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 21:32	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 21:32	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 21:32	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 21:32	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 21:32	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 21:32	637-92-3	
Methyl-tert-butyl ether	**17.9**	ug/L	5.0	1		04/23/13 21:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 21:32	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 21:32	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 21:32	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 21:32	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	101	%	70-130	1		04/23/13 21:32	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/23/13 21:32	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/23/13 21:32	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		04/23/13 21:32	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-3 **Lab ID: 92155248011** Collected: 04/17/13 17:20 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:30	04/21/13 23:54	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	103	%	60-140	1	04/21/13 17:30	04/21/13 23:54	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	04/20/13 12:15	04/24/13 12:48	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 21:47	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 21:47	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 21:47	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 21:47	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 21:47	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 21:47	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 21:47	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 21:47	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 21:47	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 21:47	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 21:47	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 21:47	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 21:47	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 21:47	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 21:47	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 21:47	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 21:47	460-00-4	
Dibromofluoromethane (S)	103	%	70-130	1		04/23/13 21:47	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/23/13 21:47	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		04/23/13 21:47	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: TRIP BLANK **Lab ID: 92155248012** Collected: 04/17/13 00:00 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 17:06	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 17:06	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 17:06	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 17:06	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 17:06	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 17:06	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 17:06	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 17:06	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 17:06	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 17:06	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 17:06	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 17:06	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 17:06	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 17:06	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 17:06	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 17:06	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 17:06	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/23/13 17:06	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/23/13 17:06	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		04/23/13 17:06	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-4 **Lab ID: 92155248013** Collected: 04/17/13 18:00 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:30	04/22/13 00:14	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	103	%	60-140	1	04/21/13 17:30	04/22/13 00:14	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**87.5**	ug/L	5.0	1	04/20/13 12:15	04/24/13 12:54	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 22:03	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 22:03	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 22:03	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 22:03	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 22:03	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 22:03	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 22:03	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 22:03	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 22:03	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 22:03	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 22:03	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 22:03	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 22:03	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 22:03	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 22:03	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 22:03	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 22:03	460-00-4	
Dibromofluoromethane (S)	105	%	70-130	1		04/23/13 22:03	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/23/13 22:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/23/13 22:03	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-6 **Lab ID: 92155248014** Collected: 04/17/13 18:30 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:30	04/22/13 00:34	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	110	%	60-140	1	04/21/13 17:30	04/22/13 00:34	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**23.7**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:10	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	1000	10		04/23/13 22:18	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	10		04/23/13 22:18	994-05-8	
Benzene	**6110**	ug/L	500	100		04/24/13 16:48	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/23/13 22:18	624-95-3	
tert-Butyl Alcohol	**1760**	ug/L	1000	10		04/23/13 22:18	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/23/13 22:18	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/23/13 22:18	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/23/13 22:18	108-20-3	
Ethanol	ND	ug/L	2000	10		04/23/13 22:18	64-17-5	
Ethylbenzene	**3080**	ug/L	500	100		04/24/13 16:48	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/23/13 22:18	637-92-3	
Methyl-tert-butyl ether	**2140**	ug/L	500	100		04/24/13 16:48	1634-04-4	
Naphthalene	**716**	ug/L	50.0	10		04/23/13 22:18	91-20-3	
Toluene	**4410**	ug/L	500	100		04/24/13 16:48	108-88-3	
m&p-Xylene	**6180**	ug/L	1000	100		04/24/13 16:48	179601-23-1	
o-Xylene	**1110**	ug/L	50.0	10		04/23/13 22:18	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	98	%	70-130	10		04/23/13 22:18	460-00-4	
Dibromofluoromethane (S)	100	%	70-130	10		04/23/13 22:18	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	70-130	10		04/23/13 22:18	17060-07-0	
Toluene-d8 (S)	100	%	70-130	10		04/23/13 22:18	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: FIELD BLANK 1 **Lab ID: 92155248015** Collected: 04/17/13 17:30 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:30	04/22/13 00:55	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	102	%	60-140	1	04/21/13 17:30	04/22/13 00:55	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:13	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 22:34	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 22:34	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 22:34	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 22:34	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 22:34	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 22:34	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 22:34	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 22:34	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 22:34	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 22:34	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 22:34	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 22:34	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 22:34	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 22:34	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 22:34	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 22:34	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		04/23/13 22:34	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/23/13 22:34	1868-53-7	
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		04/23/13 22:34	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		04/23/13 22:34	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: FIELD BLANK 2 **Lab ID: 92155248016** Collected: 04/18/13 09:15 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:31	04/22/13 01:15	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	105	%	60-140	1	04/21/13 17:31	04/22/13 01:15	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:16	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 22:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 22:49	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 22:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 22:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 22:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 22:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 22:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 22:49	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 22:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 22:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 22:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 22:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 22:49	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 22:49	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 22:49	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 22:49	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 22:49	460-00-4	
Dibromofluoromethane (S)	104	%	70-130	1		04/23/13 22:49	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/23/13 22:49	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/23/13 22:49	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-TW-1 **Lab ID: 92155248017** Collected: 04/18/13 10:15 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:31	04/22/13 01:35	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	96	%	60-140	1	04/21/13 17:31	04/22/13 01:35	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**22.9**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:19	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 23:05	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 23:05	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 23:05	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 23:05	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 23:05	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 23:05	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 23:05	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 23:05	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 23:05	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 23:05	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 23:05	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 23:05	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 23:05	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 23:05	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 23:05	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 23:05	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		04/23/13 23:05	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/23/13 23:05	1868-53-7	
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		04/23/13 23:05	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		04/23/13 23:05	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-5 **Lab ID: 92155248018** Collected: 04/18/13 10:45 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	1	04/21/13 17:31	04/22/13 01:55	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	110	%	60-140	1	04/21/13 17:31	04/22/13 01:55	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**533**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:22	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 23:21	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 23:21	994-05-8	
Benzene	**16.6**	ug/L	5.0	1		04/23/13 23:21	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 23:21	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 23:21	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 23:21	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 23:21	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 23:21	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 23:21	64-17-5	
Ethylbenzene	**37.3**	ug/L	5.0	1		04/23/13 23:21	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 23:21	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 23:21	1634-04-4	
Naphthalene	**15.0**	ug/L	5.0	1		04/23/13 23:21	91-20-3	
Toluene	**23.6**	ug/L	5.0	1		04/23/13 23:21	108-88-3	
m&p-Xylene	**122**	ug/L	10.0	1		04/23/13 23:21	179601-23-1	
o-Xylene	**53.6**	ug/L	5.0	1		04/23/13 23:21	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 23:21	460-00-4	
Dibromofluoromethane (S)	100	%	70-130	1		04/23/13 23:21	1868-53-7	
1,2-Dichloroethane-d4 (S)	98	%	70-130	1		04/23/13 23:21	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/23/13 23:21	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-TW-2 **Lab ID: 92155248019** Collected: 04/18/13 11:30 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:31	04/22/13 02:16	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	96	%	60-140	1	04/21/13 17:31	04/22/13 02:16	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**37.8**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:25	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 23:36	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 23:36	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 23:36	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 23:36	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 23:36	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 23:36	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 23:36	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 23:36	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 23:36	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 23:36	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 23:36	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 23:36	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 23:36	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 23:36	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 23:36	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 23:36	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 23:36	460-00-4	
Dibromofluoromethane (S)	101	%	70-130	1		04/23/13 23:36	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/23/13 23:36	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		04/23/13 23:36	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-14 **Lab ID: 92155248020** Collected: 04/18/13 12:10 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:31	04/22/13 02:36	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	86	%	60-140	1	04/21/13 17:31	04/22/13 02:36	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**54.3**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:28	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 23:52	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 23:52	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 23:52	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 23:52	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 23:52	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 23:52	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 23:52	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 23:52	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 23:52	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 23:52	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 23:52	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 23:52	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 23:52	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 23:52	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 23:52	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 23:52	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		04/23/13 23:52	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/23/13 23:52	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/23/13 23:52	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/23/13 23:52	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-15 **Lab ID: 92155248021** Collected: 04/18/13 16:15 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/21/13 17:31	04/22/13 02:56	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	104	%	60-140	1	04/21/13 17:31	04/22/13 02:56	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**345**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:32	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/24/13 00:07	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/24/13 00:07	994-05-8	
Benzene	ND	ug/L	5.0	1		04/24/13 00:07	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/24/13 00:07	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/24/13 00:07	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/24/13 00:07	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/24/13 00:07	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/24/13 00:07	108-20-3	
Ethanol	ND	ug/L	200	1		04/24/13 00:07	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/24/13 00:07	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/24/13 00:07	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/24/13 00:07	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/24/13 00:07	91-20-3	
Toluene	ND	ug/L	5.0	1		04/24/13 00:07	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/24/13 00:07	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/24/13 00:07	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		04/24/13 00:07	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/24/13 00:07	1868-53-7	
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		04/24/13 00:07	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/24/13 00:07	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-16 **Lab ID: 92155248022** Collected: 04/18/13 13:35 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/22/13 11:54	04/22/13 15:18	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	79	%	60-140	1	04/22/13 11:54	04/22/13 15:18	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**845**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:35	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**249**	ug/L	100	1		04/24/13 00:23	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/24/13 00:23	994-05-8	
Benzene	ND	ug/L	5.0	1		04/24/13 00:23	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/24/13 00:23	624-95-3	
tert-Butyl Alcohol	**1730**	ug/L	100	1		04/24/13 00:23	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/24/13 00:23	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/24/13 00:23	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/24/13 00:23	108-20-3	
Ethanol	ND	ug/L	200	1		04/24/13 00:23	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/24/13 00:23	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/24/13 00:23	637-92-3	
Methyl-tert-butyl ether	**9.1**	ug/L	5.0	1		04/24/13 00:23	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/24/13 00:23	91-20-3	
Toluene	ND	ug/L	5.0	1		04/24/13 00:23	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/24/13 00:23	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/24/13 00:23	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		04/24/13 00:23	460-00-4	
Dibromofluoromethane (S)	102	%	70-130	1		04/24/13 00:23	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	1		04/24/13 00:23	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		04/24/13 00:23	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: DUPLICATE 1 **Lab ID: 92155248023** Collected: 04/18/13 00:00 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/20/13 15:37	04/21/13 10:51	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	112	%	60-140	1	04/20/13 15:37	04/21/13 10:51	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**552**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:47	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	1000	10		04/24/13 00:38	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	10		04/24/13 00:38	994-05-8	
Benzene	**406**	ug/L	50.0	10		04/24/13 00:38	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	10		04/24/13 00:38	624-95-3	
tert-Butyl Alcohol	ND	ug/L	1000	10		04/24/13 00:38	75-65-0	
tert-Butyl Formate	ND	ug/L	500	10		04/24/13 00:38	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	10		04/24/13 00:38	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	10		04/24/13 00:38	108-20-3	
Ethanol	ND	ug/L	2000	10		04/24/13 00:38	64-17-5	
Ethylbenzene	**965**	ug/L	50.0	10		04/24/13 00:38	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	10		04/24/13 00:38	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	50.0	10		04/24/13 00:38	1634-04-4	
Naphthalene	**352**	ug/L	50.0	10		04/24/13 00:38	91-20-3	
Toluene	**589**	ug/L	50.0	10		04/24/13 00:38	108-88-3	
m&p-Xylene	**3050**	ug/L	100	10		04/24/13 00:38	179601-23-1	
o-Xylene	**1360**	ug/L	50.0	10		04/24/13 00:38	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	10		04/24/13 00:38	460-00-4	
Dibromofluoromethane (S)	99	%	70-130	10		04/24/13 00:38	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130	10		04/24/13 00:38	17060-07-0	
Toluene-d8 (S)	101	%	70-130	10		04/24/13 00:38	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: TRIP BLANK **Lab ID: 92155248024** Collected: 04/18/13 00:00 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/24/13 09:14	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/24/13 09:14	994-05-8	
Benzene	ND	ug/L	5.0	1		04/24/13 09:14	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/24/13 09:14	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/24/13 09:14	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/24/13 09:14	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/24/13 09:14	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/24/13 09:14	108-20-3	
Ethanol	ND	ug/L	200	1		04/24/13 09:14	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/24/13 09:14	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/24/13 09:14	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/24/13 09:14	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/24/13 09:14	91-20-3	
Toluene	ND	ug/L	5.0	1		04/24/13 09:14	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/24/13 09:14	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/24/13 09:14	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	100	%	70-130	1		04/24/13 09:14	460-00-4	
Dibromofluoromethane (S)	106	%	70-130	1		04/24/13 09:14	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130	1		04/24/13 09:14	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		04/24/13 09:14	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-14-2 **Lab ID: 92155248025** Collected: 04/15/13 10:18 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	6.0	1		04/22/13 17:44	71-43-2	1g
Ethylbenzene	ND	ug/kg	6.0	1		04/22/13 17:44	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	6.0	1		04/22/13 17:44	1634-04-4	
Naphthalene	ND	ug/kg	6.0	1		04/22/13 17:44	91-20-3	
Toluene	ND	ug/kg	6.0	1		04/22/13 17:44	108-88-3	
m&p-Xylene	ND	ug/kg	12.0	1		04/22/13 17:44	179601-23-1	
o-Xylene	ND	ug/kg	6.0	1		04/22/13 17:44	95-47-6	
Surrogates								
Dibromofluoromethane (S)	109	%	70-130	1		04/22/13 17:44	1868-53-7	
Toluene-d8 (S)	89	%	70-130	1		04/22/13 17:44	2037-26-5	
4-Bromofluorobenzene (S)	81	%	70-130	1		04/22/13 17:44	460-00-4	
1,2-Dichloroethane-d4 (S)	117	%	70-132	1		04/22/13 17:44	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**23.4**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-15-2 **Lab ID: 92155248026** Collected: 04/15/13 10:45 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	5.9	1		04/22/13 18:03	71-43-2	1g
Ethylbenzene	ND	ug/kg	5.9	1		04/22/13 18:03	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	5.9	1		04/22/13 18:03	1634-04-4	
Naphthalene	ND	ug/kg	5.9	1		04/22/13 18:03	91-20-3	
Toluene	ND	ug/kg	5.9	1		04/22/13 18:03	108-88-3	
m&p-Xylene	ND	ug/kg	11.7	1		04/22/13 18:03	179601-23-1	
o-Xylene	ND	ug/kg	5.9	1		04/22/13 18:03	95-47-6	
Surrogates								
Dibromofluoromethane (S)	104	%	70-130	1		04/22/13 18:03	1868-53-7	
Toluene-d8 (S)	88	%	70-130	1		04/22/13 18:03	2037-26-5	
4-Bromofluorobenzene (S)	72	%	70-130	1		04/22/13 18:03	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-132	1		04/22/13 18:03	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**26.6**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-16-2 **Lab ID: 92155248027** Collected: 04/15/13 11:15 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.9	1		04/22/13 18:21	71-43-2	
Ethylbenzene	ND	ug/kg	4.9	1		04/22/13 18:21	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		04/22/13 18:21	1634-04-4	
Naphthalene	ND	ug/kg	4.9	1		04/22/13 18:21	91-20-3	
Toluene	ND	ug/kg	4.9	1		04/22/13 18:21	108-88-3	
m&p-Xylene	ND	ug/kg	9.7	1		04/22/13 18:21	179601-23-1	
o-Xylene	ND	ug/kg	4.9	1		04/22/13 18:21	95-47-6	
Surrogates								
Dibromofluoromethane (S)	95	%	70-130	1		04/22/13 18:21	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		04/22/13 18:21	2037-26-5	
4-Bromofluorobenzene (S)	92	%	70-130	1		04/22/13 18:21	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-132	1		04/22/13 18:21	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**21.4**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-TM-2-4 **Lab ID: 92155248028** Collected: 04/15/13 12:30 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.3	1		04/22/13 18:40	71-43-2	
Ethylbenzene	ND	ug/kg	4.3	1		04/22/13 18:40	100-41-4	
Methyl-tert-butyl ether	**49.3**	ug/kg	4.3	1		04/22/13 18:40	1634-04-4	
Naphthalene	ND	ug/kg	4.3	1		04/22/13 18:40	91-20-3	
Toluene	ND	ug/kg	4.3	1		04/22/13 18:40	108-88-3	
m&p-Xylene	**20.1**	ug/kg	8.6	1		04/22/13 18:40	179601-23-1	
o-Xylene	ND	ug/kg	4.3	1		04/22/13 18:40	95-47-6	
Surrogates								
Dibromofluoromethane (S)	98	%	70-130	1		04/22/13 18:40	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		04/22/13 18:40	2037-26-5	
4-Bromofluorobenzene (S)	92	%	70-130	1		04/22/13 18:40	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-132	1		04/22/13 18:40	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.1**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-TW-1-4 **Lab ID: 92155248029** Collected: 04/15/13 14:35 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**7.6**	ug/kg	5.0	1		04/22/13 18:59	71-43-2	
Ethylbenzene	**6.0**	ug/kg	5.0	1		04/22/13 18:59	100-41-4	
Methyl-tert-butyl ether	**74.5**	ug/kg	5.0	1		04/22/13 18:59	1634-04-4	
Naphthalene	ND	ug/kg	5.0	1		04/22/13 18:59	91-20-3	
Toluene	**15.3**	ug/kg	5.0	1		04/22/13 18:59	108-88-3	
m&p-Xylene	**17.3**	ug/kg	10.1	1		04/22/13 18:59	179601-23-1	
o-Xylene	**9.5**	ug/kg	5.0	1		04/22/13 18:59	95-47-6	
Surrogates								
Dibromofluoromethane (S)	100	%	70-130	1		04/22/13 18:59	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		04/22/13 18:59	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	1		04/22/13 18:59	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-132	1		04/22/13 18:59	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.6**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-1-4 **Lab ID: 92155248031** Collected: 04/16/13 09:10 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**2320**	ug/kg	114	25		04/22/13 19:18	71-43-2	
Ethylbenzene	**5670**	ug/kg	456	100		04/23/13 12:22	100-41-4	
Methyl-tert-butyl ether	**3960**	ug/kg	114	25		04/22/13 19:18	1634-04-4	
Naphthalene	**2160**	ug/kg	114	25		04/22/13 19:18	91-20-3	
Toluene	**16500**	ug/kg	456	100		04/23/13 12:22	108-88-3	
m&p-Xylene	**22000**	ug/kg	913	100		04/23/13 12:22	179601-23-1	
o-Xylene	**8940**	ug/kg	456	100		04/23/13 12:22	95-47-6	
Surrogates								
Dibromofluoromethane (S)	84	%	70-130	25		04/22/13 19:18	1868-53-7	
Toluene-d8 (S)	109	%	70-130	25		04/22/13 19:18	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	25		04/22/13 19:18	460-00-4	
1,2-Dichloroethane-d4 (S)	92	%	70-132	25		04/22/13 19:18	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**8.5**	%	0.10	1		04/23/13 08:18		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-2-4 **Lab ID: 92155248032** Collected: 04/16/13 10:25 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**1660**	ug/kg	242	50		04/23/13 12:41	71-43-2	
Ethylbenzene	**1330**	ug/kg	242	50		04/23/13 12:41	100-41-4	
Methyl-tert-butyl ether	**5270**	ug/kg	242	50		04/23/13 12:41	1634-04-4	
Naphthalene	**1270**	ug/kg	242	50		04/23/13 12:41	91-20-3	
Toluene	**4950**	ug/kg	242	50		04/23/13 12:41	108-88-3	
m&p-Xylene	**5180**	ug/kg	483	50		04/23/13 12:41	179601-23-1	
o-Xylene	**2320**	ug/kg	242	50		04/23/13 12:41	95-47-6	
Surrogates								
Dibromofluoromethane (S)	88	%	70-130	1		04/22/13 19:37	1868-53-7	
Toluene-d8 (S)	97	%	70-130	1		04/22/13 19:37	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		04/22/13 19:37	460-00-4	
1,2-Dichloroethane-d4 (S)	139	%	70-132	1		04/22/13 19:37	17060-07-0	S2
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.9**	%	0.10	1		04/23/13 08:18		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-RW-3-4 **Lab ID: 92155248033** Collected: 04/16/13 07:55 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**417**	ug/kg	128	25		04/23/13 13:19	71-43-2	D3
Ethylbenzene	**424**	ug/kg	128	25		04/23/13 13:19	100-41-4	
Methyl-tert-butyl ether	**1410**	ug/kg	128	25		04/23/13 13:19	1634-04-4	
Naphthalene	**281**	ug/kg	128	25		04/23/13 13:19	91-20-3	
Toluene	ND	ug/kg	128	25		04/23/13 13:19	108-88-3	
m&p-Xylene	**695**	ug/kg	257	25		04/23/13 13:19	179601-23-1	
o-Xylene	ND	ug/kg	128	25		04/23/13 13:19	95-47-6	
Surrogates								
Dibromofluoromethane (S)	80	%	70-130	25		04/23/13 13:19	1868-53-7	
Toluene-d8 (S)	103	%	70-130	25		04/23/13 13:19	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	25		04/23/13 13:19	460-00-4	
1,2-Dichloroethane-d4 (S)	85	%	70-132	25		04/23/13 13:19	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10**	%	0.10	1		04/24/13 08:55		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-MW-17-4 **Lab ID: 92155248034** Collected: 04/16/13 12:45 Received: 04/19/13 13:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**2070**	ug/kg	154	25		04/22/13 20:14	71-43-2	
Ethylbenzene	**771**	ug/kg	154	25		04/22/13 20:14	100-41-4	
Methyl-tert-butyl ether	**8120**	ug/kg	618	100		04/23/13 13:00	1634-04-4	
Naphthalene	**762**	ug/kg	154	25		04/22/13 20:14	91-20-3	
Toluene	**4150**	ug/kg	154	25		04/22/13 20:14	108-88-3	
m&p-Xylene	**2930**	ug/kg	309	25		04/22/13 20:14	179601-23-1	
o-Xylene	**1360**	ug/kg	154	25		04/22/13 20:14	95-47-6	
Surrogates								
Dibromofluoromethane (S)	78	%	70-130	25		04/22/13 20:14	1868-53-7	
Toluene-d8 (S)	103	%	70-130	25		04/22/13 20:14	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	25		04/22/13 20:14	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-132	25		04/22/13 20:14	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.7**	%	0.10	1		04/24/13 08:55		

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ANALYTICAL RESULTS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Sample: 02567-WSW-1 **Lab ID: 92155248036** Collected: 04/18/13 16:40 Received: 04/19/13 13:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	04/20/13 15:37	04/21/13 11:12	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	99	%	60-140	1	04/20/13 15:37	04/21/13 11:12	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**8.2**	ug/L	5.0	1	04/20/13 12:15	04/24/13 13:50	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		04/23/13 17:22	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		04/23/13 17:22	994-05-8	
Benzene	ND	ug/L	5.0	1		04/23/13 17:22	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		04/23/13 17:22	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		04/23/13 17:22	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		04/23/13 17:22	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		04/23/13 17:22	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		04/23/13 17:22	108-20-3	
Ethanol	ND	ug/L	200	1		04/23/13 17:22	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		04/23/13 17:22	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		04/23/13 17:22	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		04/23/13 17:22	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		04/23/13 17:22	91-20-3	
Toluene	ND	ug/L	5.0	1		04/23/13 17:22	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		04/23/13 17:22	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		04/23/13 17:22	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		04/23/13 17:22	460-00-4	
Dibromofluoromethane (S)	104	%	70-130	1		04/23/13 17:22	1868-53-7	
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		04/23/13 17:22	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		04/23/13 17:22	2037-26-5	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MPRP/13117 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 92155248001, 92155248002, 92155248003, 92155248004, 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010

METHOD BLANK: 960507 Matrix: Water
Associated Lab Samples: 92155248001, 92155248002, 92155248003, 92155248004, 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	04/23/13 21:17	

LABORATORY CONTROL SAMPLE: 960508

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	450	90	80-120	

MATRIX SPIKE SAMPLE: 960509

Parameter	Units	92155180001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	ND	500	459	91	75-125	

SAMPLE DUPLICATE: 960510

Parameter	Units	92155189001 Result	Dup Result	RPD	Qualifiers
Lead	ug/L	ND	ND		

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MPRP/13118 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021, 92155248022, 92155248023, 92155248036

METHOD BLANK: 960511 Matrix: Water
Associated Lab Samples: 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021, 92155248022, 92155248023, 92155248036

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	04/24/13 12:42	

LABORATORY CONTROL SAMPLE: 960512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	479	96	80-120	

MATRIX SPIKE SAMPLE: 960513

Parameter	Units	92155248011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	ND	500	492	98	75-125	

SAMPLE DUPLICATE: 960514

Parameter	Units	92155248013 Result	Dup Result	RPD	Qualifiers
Lead	ug/L	87.5	88.1	1	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MSV/22726 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92155248001, 92155248002, 92155248003, 92155248004, 92155248012, 92155248036

METHOD BLANK: 961069 Matrix: Water
Associated Lab Samples: 92155248001, 92155248002, 92155248003, 92155248004, 92155248012, 92155248036

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/23/13 14:46	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/23/13 14:46	
Benzene	ug/L	ND	5.0	04/23/13 14:46	
Diisopropyl ether	ug/L	ND	5.0	04/23/13 14:46	
Ethanol	ug/L	ND	200	04/23/13 14:46	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/23/13 14:46	
Ethylbenzene	ug/L	ND	5.0	04/23/13 14:46	
m&p-Xylene	ug/L	ND	10.0	04/23/13 14:46	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/23/13 14:46	
Naphthalene	ug/L	ND	5.0	04/23/13 14:46	
o-Xylene	ug/L	ND	5.0	04/23/13 14:46	
tert-Amyl Alcohol	ug/L	ND	100	04/23/13 14:46	
tert-Amylmethyl ether	ug/L	ND	10.0	04/23/13 14:46	
tert-Butyl Alcohol	ug/L	ND	100	04/23/13 14:46	
tert-Butyl Formate	ug/L	ND	50.0	04/23/13 14:46	
Toluene	ug/L	ND	5.0	04/23/13 14:46	
1,2-Dichloroethane-d4 (S)	%	101	70-130	04/23/13 14:46	
4-Bromofluorobenzene (S)	%	99	70-130	04/23/13 14:46	
Dibromofluoromethane (S)	%	99	70-130	04/23/13 14:46	
Toluene-d8 (S)	%	100	70-130	04/23/13 14:46	

LABORATORY CONTROL SAMPLE: 961070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	53.8	108	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1110	111	70-130	
Benzene	ug/L	50	52.7	105	70-130	
Diisopropyl ether	ug/L	50	56.7	113	70-130	
Ethanol	ug/L	2000	2620	131	70-130	F3,L0
Ethyl-tert-butyl ether	ug/L	100	99.4	99	70-130	
Ethylbenzene	ug/L	50	52.0	104	70-130	
m&p-Xylene	ug/L	100	101	101	70-130	
Methyl-tert-butyl ether	ug/L	50	54.1	108	70-130	
Naphthalene	ug/L	50	55.5	111	70-130	
o-Xylene	ug/L	50	49.1	98	70-130	
tert-Amyl Alcohol	ug/L	1000	1040	104	70-130	
tert-Amylmethyl ether	ug/L	100	105	105	70-130	
tert-Butyl Alcohol	ug/L	500	547	109	70-130	
tert-Butyl Formate	ug/L	400	452	113	70-130	
Toluene	ug/L	50	50.6	101	70-130	
1,2-Dichloroethane-d4 (S)	%			106	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

LABORATORY CONTROL SAMPLE: 961070

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			99	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 962206 962207

Parameter	Units	92155248036 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	59.0	59.1	118	118	70-130	0	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1310	1370	131	137	70-130	5	M1
Benzene	ug/L	ND	50	50	59.9	60.2	120	120	70-130	0	
Diisopropyl ether	ug/L	ND	50	50	62.5	63.0	125	126	70-130	1	
Ethanol	ug/L	ND	2000	2000	3060	3140	153	157	70-130	3	M0
Ethyl-tert-butyl ether	ug/L	ND	100	100	107	108	107	108	70-130	2	
Ethylbenzene	ug/L	ND	50	50	60.7	59.4	121	119	70-130	2	
m&p-Xylene	ug/L	ND	100	100	118	116	118	115	70-130	2	
Methyl-tert-butyl ether	ug/L	ND	50	50	63.9	59.9	128	120	70-130	7	
Naphthalene	ug/L	ND	50	50	60.9	56.6	121	113	70-130	7	
o-Xylene	ug/L	ND	50	50	55.2	54.5	110	109	70-130	1	
tert-Amyl Alcohol	ug/L	ND	1000	1000	1270	1300	127	130	70-130	2	
tert-Amylmethyl ether	ug/L	ND	100	100	117	120	117	120	70-130	3	
tert-Butyl Alcohol	ug/L	ND	500	500	898	962	180	192	70-130	7	M1
tert-Butyl Formate	ug/L	ND	400	400	98.3	67.3	25	17	70-130	37	P5,R1
Toluene	ug/L	ND	50	50	57.9	58.7	116	117	70-130	1	
1,2-Dichloroethane-d4 (S)	%						108	96	70-130		
4-Bromofluorobenzene (S)	%						100	98	70-130		
Dibromofluoromethane (S)	%						99	99	70-130		
Toluene-d8 (S)	%						100	103	70-130		

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MSV/22727 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010, 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021, 92155248022, 92155248023

METHOD BLANK: 961071 Matrix: Water
Associated Lab Samples: 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010, 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021, 92155248022, 92155248023

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/23/13 14:46	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/23/13 14:46	
Benzene	ug/L	ND	5.0	04/23/13 14:46	
Diisopropyl ether	ug/L	ND	5.0	04/23/13 14:46	
Ethanol	ug/L	ND	200	04/23/13 14:46	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/23/13 14:46	
Ethylbenzene	ug/L	ND	5.0	04/23/13 14:46	
m&p-Xylene	ug/L	ND	10.0	04/23/13 14:46	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/23/13 14:46	
Naphthalene	ug/L	ND	5.0	04/23/13 14:46	
o-Xylene	ug/L	ND	5.0	04/23/13 14:46	
tert-Amyl Alcohol	ug/L	ND	100	04/23/13 14:46	
tert-Amylmethyl ether	ug/L	ND	10.0	04/23/13 14:46	
tert-Butyl Alcohol	ug/L	ND	100	04/23/13 14:46	
tert-Butyl Formate	ug/L	ND	50.0	04/23/13 14:46	
Toluene	ug/L	ND	5.0	04/23/13 14:46	
1,2-Dichloroethane-d4 (S)	%	101	70-130	04/23/13 14:46	
4-Bromofluorobenzene (S)	%	99	70-130	04/23/13 14:46	
Dibromofluoromethane (S)	%	99	70-130	04/23/13 14:46	
Toluene-d8 (S)	%	100	70-130	04/23/13 14:46	

LABORATORY CONTROL SAMPLE: 961072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	53.8	108	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1230	123	70-130	
Benzene	ug/L	50	52.6	105	70-130	
Diisopropyl ether	ug/L	50	56.7	113	70-130	
Ethanol	ug/L	2000	2960	148	70-130	F3,L0
Ethyl-tert-butyl ether	ug/L	100	97.7	98	70-130	
Ethylbenzene	ug/L	50	53.5	107	70-130	
m&p-Xylene	ug/L	100	106	106	70-130	
Methyl-tert-butyl ether	ug/L	50	54.2	108	70-130	
Naphthalene	ug/L	50	61.8	124	70-130	
o-Xylene	ug/L	50	50.9	102	70-130	
tert-Amyl Alcohol	ug/L	1000	1070	107	70-130	
tert-Amylmethyl ether	ug/L	100	107	107	70-130	
tert-Butyl Alcohol	ug/L	500	553	111	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

LABORATORY CONTROL SAMPLE: 961072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
tert-Butyl Formate	ug/L	400	449	112	70-130	
Toluene	ug/L	50	52.0	104	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 962204 962205

Parameter	Units	92155248021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	59.1	60.8	118	122	70-130	3	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1350	1350	135	135	70-130	0	M1
Benzene	ug/L	ND	50	50	58.4	59.0	117	118	70-130	1	
Diisopropyl ether	ug/L	ND	50	50	61.1	63.1	122	126	70-130	3	
Ethanol	ug/L	ND	2000	2000	2920	3300	146	165	70-130	12	M0
Ethyl-tert-butyl ether	ug/L	ND	100	100	106	108	106	108	70-130	3	
Ethylbenzene	ug/L	ND	50	50	60.5	60.7	121	121	70-130	0	
m&p-Xylene	ug/L	ND	100	100	119	121	119	121	70-130	2	
Methyl-tert-butyl ether	ug/L	ND	50	50	63.7	58.8	127	118	70-130	8	
Naphthalene	ug/L	ND	50	50	53.8	57.6	108	115	70-130	7	
o-Xylene	ug/L	ND	50	50	54.3	56.1	109	112	70-130	3	
tert-Amyl Alcohol	ug/L	ND	1000	1000	1240	1290	124	129	70-130	4	
tert-Amylmethyl ether	ug/L	ND	100	100	115	117	115	117	70-130	1	
tert-Butyl Alcohol	ug/L	ND	500	500	864	946	173	189	70-130	9	M1
tert-Butyl Formate	ug/L	ND	400	400	161	107	40	27	70-130	40	M1,R1
Toluene	ug/L	ND	50	50	58.1	59.9	116	120	70-130	3	
1,2-Dichloroethane-d4 (S)	%						109	113	70-130		
4-Bromofluorobenzene (S)	%						102	103	70-130		
Dibromofluoromethane (S)	%						101	101	70-130		
Toluene-d8 (S)	%						102	104	70-130		

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MSV/22736
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92155248024

METHOD BLANK: 961776
Matrix: Water
Associated Lab Samples: 92155248024

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/24/13 02:12	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/24/13 02:12	
Benzene	ug/L	ND	5.0	04/24/13 02:12	
Diisopropyl ether	ug/L	ND	5.0	04/24/13 02:12	
Ethanol	ug/L	ND	200	04/24/13 02:12	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/24/13 02:12	
Ethylbenzene	ug/L	ND	5.0	04/24/13 02:12	
m&p-Xylene	ug/L	ND	10.0	04/24/13 02:12	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/24/13 02:12	
Naphthalene	ug/L	ND	5.0	04/24/13 02:12	
o-Xylene	ug/L	ND	5.0	04/24/13 02:12	
tert-Amyl Alcohol	ug/L	ND	100	04/24/13 02:12	
tert-Amylmethyl ether	ug/L	ND	10.0	04/24/13 02:12	
tert-Butyl Alcohol	ug/L	ND	100	04/24/13 02:12	
tert-Butyl Formate	ug/L	ND	50.0	04/24/13 02:12	
Toluene	ug/L	ND	5.0	04/24/13 02:12	
1,2-Dichloroethane-d4 (S)	%	102	70-130	04/24/13 02:12	
4-Bromofluorobenzene (S)	%	98	70-130	04/24/13 02:12	
Dibromofluoromethane (S)	%	101	70-130	04/24/13 02:12	
Toluene-d8 (S)	%	99	70-130	04/24/13 02:12	

LABORATORY CONTROL SAMPLE: 961777

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	52.9	106	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1210	121	70-130	
Benzene	ug/L	50	51.5	103	70-130	
Diisopropyl ether	ug/L	50	56.0	112	70-130	
Ethanol	ug/L	2000	2800	140	70-130	F3,L3
Ethyl-tert-butyl ether	ug/L	100	97.9	98	70-130	
Ethylbenzene	ug/L	50	52.4	105	70-130	
m&p-Xylene	ug/L	100	104	104	70-130	
Methyl-tert-butyl ether	ug/L	50	59.2	118	70-130	
Naphthalene	ug/L	50	54.0	108	70-130	
o-Xylene	ug/L	50	48.0	96	70-130	
tert-Amyl Alcohol	ug/L	1000	1170	117	70-130	
tert-Amylmethyl ether	ug/L	100	107	107	70-130	
tert-Butyl Alcohol	ug/L	500	617	123	70-130	
tert-Butyl Formate	ug/L	400	439	110	70-130	
Toluene	ug/L	50	51.5	103	70-130	
1,2-Dichloroethane-d4 (S)	%			97	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

LABORATORY CONTROL SAMPLE: 961777

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			101	70-130	
Toluene-d8 (S)	%			102	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MSV/22722 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92155248025, 92155248026, 92155248027, 92155248028, 92155248029, 92155248031, 92155248032, 92155248034

METHOD BLANK: 961012 Matrix: Solid
Associated Lab Samples: 92155248025, 92155248026, 92155248027, 92155248028, 92155248029, 92155248031, 92155248032, 92155248034

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.5	04/22/13 17:25	
Ethylbenzene	ug/kg	ND	5.5	04/22/13 17:25	
m&p-Xylene	ug/kg	ND	11.0	04/22/13 17:25	
Methyl-tert-butyl ether	ug/kg	ND	5.5	04/22/13 17:25	
Naphthalene	ug/kg	ND	5.5	04/22/13 17:25	
o-Xylene	ug/kg	ND	5.5	04/22/13 17:25	
Toluene	ug/kg	ND	5.5	04/22/13 17:25	
1,2-Dichloroethane-d4 (S)	%	102	70-132	04/22/13 17:25	
4-Bromofluorobenzene (S)	%	96	70-130	04/22/13 17:25	
Dibromofluoromethane (S)	%	101	70-130	04/22/13 17:25	
Toluene-d8 (S)	%	101	70-130	04/22/13 17:25	

LABORATORY CONTROL SAMPLE: 961013

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	54	53.8	100	70-130	
Ethylbenzene	ug/kg	54	53.4	99	70-137	
m&p-Xylene	ug/kg	108	107	99	70-140	
Methyl-tert-butyl ether	ug/kg	54	48.0	89	45-150	
Naphthalene	ug/kg	54	57.9	107	70-148	
o-Xylene	ug/kg	54	51.8	96	70-141	
Toluene	ug/kg	54	52.1	96	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-132	
4-Bromofluorobenzene (S)	%			102	70-130	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			101	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: MSV/22728
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92155248033

METHOD BLANK: 961359 Matrix: Solid
Associated Lab Samples: 92155248033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.2	04/23/13 10:48	
Ethylbenzene	ug/kg	ND	5.2	04/23/13 10:48	
m&p-Xylene	ug/kg	ND	10.3	04/23/13 10:48	
Methyl-tert-butyl ether	ug/kg	ND	5.2	04/23/13 10:48	
Naphthalene	ug/kg	ND	5.2	04/23/13 10:48	
o-Xylene	ug/kg	ND	5.2	04/23/13 10:48	
Toluene	ug/kg	ND	5.2	04/23/13 10:48	
1,2-Dichloroethane-d4 (S)	%	96	70-132	04/23/13 10:48	
4-Bromofluorobenzene (S)	%	96	70-130	04/23/13 10:48	
Dibromofluoromethane (S)	%	95	70-130	04/23/13 10:48	
Toluene-d8 (S)	%	101	70-130	04/23/13 10:48	

LABORATORY CONTROL SAMPLE: 961360

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	51.4	53.6	104	70-130	
Ethylbenzene	ug/kg	51.4	54.2	105	70-137	
m&p-Xylene	ug/kg	103	111	108	70-140	
Methyl-tert-butyl ether	ug/kg	51.4	50.6	98	45-150	
Naphthalene	ug/kg	51.4	54.4	106	70-148	
o-Xylene	ug/kg	51.4	52.4	102	70-141	
Toluene	ug/kg	51.4	53.2	103	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: OEXT/21715 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92155248023, 92155248036

METHOD BLANK: 960622 Matrix: Water
Associated Lab Samples: 92155248023, 92155248036

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	04/21/13 03:26	
1-Chloro-2-bromopropane (S)	%	102	60-140	04/21/13 03:26	

LABORATORY CONTROL SAMPLE & LCSD: 960623 960624

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.29	0.30	0.30	106	106	60-140	2	20	
1-Chloro-2-bromopropane (S)	%				103	104	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 960625 960626

Parameter	Units	92155085001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.29	.29	0.31	0.31	108	108	60-140	0	
1-Chloro-2-bromopropane (S)	%						104	104	60-140		

SAMPLE DUPLICATE: 960627

Parameter	Units	92155085002 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1-Chloro-2-bromopropane (S)	%	103	101	4	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: OEXT/21719 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92155248002, 92155248003, 92155248004, 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010, 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021

METHOD BLANK: 960764 Matrix: Water
Associated Lab Samples: 92155248002, 92155248003, 92155248004, 92155248005, 92155248006, 92155248007, 92155248008, 92155248009, 92155248010, 92155248011, 92155248013, 92155248014, 92155248015, 92155248016, 92155248017, 92155248018, 92155248019, 92155248020, 92155248021

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	04/21/13 18:29	
1-Chloro-2-bromopropane (S)	%	101	60-140	04/21/13 18:29	

LABORATORY CONTROL SAMPLE & LCSD: 960765 960766

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.29	0.30	104	104	60-140	3	20	
1-Chloro-2-bromopropane (S)	%				103	102	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 960767 960768

Parameter	Units	92155248009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.29	.29	0.28	0.28	98	96	60-140	2	
1-Chloro-2-bromopropane (S)	%						98	96	60-140		

SAMPLE DUPLICATE: 960769

Parameter	Units	92155248010 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1-Chloro-2-bromopropane (S)	%	102	103	4	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: OEXT/21729
QC Batch Method: EPA 8011
Analysis Method: EPA 8011
Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92155248001, 92155248022

METHOD BLANK: 960939 Matrix: Water
Associated Lab Samples: 92155248001, 92155248022

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	04/22/13 13:57	
1-Chloro-2-bromopropane (S)	%	103	60-140	04/22/13 13:57	

LABORATORY CONTROL SAMPLE & LCSD: 960940 960941

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.29	0.30	102	106	60-140	3	20	
1-Chloro-2-bromopropane (S)	%				104	104	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 960942 960943

Parameter	Units	92154990001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.30	0.30	106	106	60-140	0	
1-Chloro-2-bromopropane (S)	%						101	102	60-140		

SAMPLE DUPLICATE: 960944

Parameter	Units	92154990002 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1-Chloro-2-bromopropane (S)	%	103	102	3	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: PMST/5472 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92155248025, 92155248026, 92155248027, 92155248028, 92155248029, 92155248031, 92155248032

SAMPLE DUPLICATE: 960193

Parameter	Units	92155246015 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	13.7	12.7	7	

SAMPLE DUPLICATE: 960948

Parameter	Units	92155248032 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	13.9	13.9	0	

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QUALITY CONTROL DATA

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

QC Batch: PMST/5473
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92155248033, 92155248034

SAMPLE DUPLICATE: 960205

Parameter	Units	92155248033 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	10	9.7	2	

SAMPLE DUPLICATE: 960206

Parameter	Units	92155237003 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	20.2	20.4	1	

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QUALIFIERS

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g	The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
F3	The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.
R1	RPD value was outside control limits.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

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Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92155248001	**02567-MW-7**	EPA 8011	OEXT/21729	EPA 8011	GCSV/14420
92155248002	**02567-RW-3**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248003	**02567-RW-2**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248004	**02567-RW-1**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248005	**02567-MW-13**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248006	**02567-MW-10**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248007	**02567-MW-11**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248008	**02567-MW-9**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248009	**02567-MW-8**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248010	**02567-MW-2**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248011	**02567-MW-3**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248013	**02567-MW-4**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248014	**02567-MW-6**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248015	**FIELD BLANK 1**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248016	**FIELD BLANK 2**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248017	**02567-TW-1**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248018	**02567-MW-5**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248019	**02567-TW-2**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248020	**02567-MW-14**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248021	**02567-MW-15**	EPA 8011	OEXT/21719	EPA 8011	GCSV/14415
92155248022	**02567-MW-16**	EPA 8011	OEXT/21729	EPA 8011	GCSV/14420
92155248023	**DUPLICATE 1**	EPA 8011	OEXT/21715	EPA 8011	GCSV/14413
92155248036	**02567-WSW-1**	EPA 8011	OEXT/21715	EPA 8011	GCSV/14413
92155248001	**02567-MW-7**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248002	**02567-RW-3**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248003	**02567-RW-2**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248004	**02567-RW-1**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248005	**02567-MW-13**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248006	**02567-MW-10**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248007	**02567-MW-11**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248008	**02567-MW-9**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248009	**02567-MW-8**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248010	**02567-MW-2**	EPA 3010	MPRP/13117	EPA 6010	ICP/11954
92155248011	**02567-MW-3**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248013	**02567-MW-4**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248014	**02567-MW-6**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248015	**FIELD BLANK 1**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248016	**FIELD BLANK 2**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248017	**02567-TW-1**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248018	**02567-MW-5**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248019	**02567-TW-2**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248020	**02567-MW-14**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248021	**02567-MW-15**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248022	**02567-MW-16**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248023	**DUPLICATE 1**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951
92155248036	**02567-WSW-1**	EPA 3010	MPRP/13118	EPA 6010	ICP/11951

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Huntersville, NC 28078
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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North 14-215778
Pace Project No.: 92155248

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92155248001	**02567-MW-7**	EPA 8260	MSV/22726		
92155248002	**02567-RW-3**	EPA 8260	MSV/22726		
92155248003	**02567-RW-2**	EPA 8260	MSV/22726		
92155248004	**02567-RW-1**	EPA 8260	MSV/22726		
92155248005	**02567-MW-13**	EPA 8260	MSV/22727		
92155248006	**02567-MW-10**	EPA 8260	MSV/22727		
92155248007	**02567-MW-11**	EPA 8260	MSV/22727		
92155248008	**02567-MW-9**	EPA 8260	MSV/22727		
92155248009	**02567-MW-8**	EPA 8260	MSV/22727		
92155248010	**02567-MW-2**	EPA 8260	MSV/22727		
92155248011	**02567-MW-3**	EPA 8260	MSV/22727		
92155248012	**TRIP BLANK**	EPA 8260	MSV/22726		
92155248013	**02567-MW-4**	EPA 8260	MSV/22727		
92155248014	**02567-MW-6**	EPA 8260	MSV/22727		
92155248015	**FIELD BLANK 1**	EPA 8260	MSV/22727		
92155248016	**FIELD BLANK 2**	EPA 8260	MSV/22727		
92155248017	**02567-TW-1**	EPA 8260	MSV/22727		
92155248018	**02567-MW-5**	EPA 8260	MSV/22727		
92155248019	**02567-TW-2**	EPA 8260	MSV/22727		
92155248020	**02567-MW-14**	EPA 8260	MSV/22727		
92155248021	**02567-MW-15**	EPA 8260	MSV/22727		
92155248022	**02567-MW-16**	EPA 8260	MSV/22727		
92155248023	**DUPLICATE 1**	EPA 8260	MSV/22727		
92155248024	**TRIP BLANK**	EPA 8260	MSV/22736		
92155248036	**02567-WSW-1**	EPA 8260	MSV/22726		
92155248025	**02567-MW-14-2**	EPA 8260	MSV/22722		
92155248026	**02567-MW-15-2**	EPA 8260	MSV/22722		
92155248027	**02567-MW-16-2**	EPA 8260	MSV/22722		
92155248028	**02567-TM-2-4**	EPA 8260	MSV/22722		
92155248029	**02567-TW-1-4**	EPA 8260	MSV/22722		
92155248031	**02567-RW-1-4**	EPA 8260	MSV/22722		
92155248032	**02567-RW-2-4**	EPA 8260	MSV/22722		
92155248033	**02567-RW-3-4**	EPA 8260	MSV/22728		
92155248034	**02567-MW-17-4**	EPA 8260	MSV/22722		
92155248025	**02567-MW-14-2**	ASTM D2974-87	PMST/5472		
92155248026	**02567-MW-15-2**	ASTM D2974-87	PMST/5472		
92155248027	**02567-MW-16-2**	ASTM D2974-87	PMST/5472		
92155248028	**02567-TM-2-4**	ASTM D2974-87	PMST/5472		
92155248029	**02567-TW-1-4**	ASTM D2974-87	PMST/5472		
92155248031	**02567-RW-1-4**	ASTM D2974-87	PMST/5472		
92155248032	**02567-RW-2-4**	ASTM D2974-87	PMST/5472		
92155248033	**02567-RW-3-4**	ASTM D2974-87	PMST/5473		
92155248034	**02567-MW-17-4**	ASTM D2974-87	PMST/5473		

REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 1 of 4

1668594

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13504 S. POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ECS
		Address: AGAWAM MA
Email To: Bschaefer@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-2711 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: Kevin Herring
Requested Due Date/TAT:	Project Number: 14-215778	Pace Profile #: 3385-1, 7

REGULATORY AGENCY

- ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
- ☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX MTN	1,2 DCA	8011 EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92155248
1	02567-MW7	WT	G			4/17	1115		7			X	X						X	X	X	X		W1
2	02567-~~MW6~~ RW3						1245																	W2
3	02567-RW2						1325																	W3
4	02567-RW1						1405																	W4
5	02567-MW13						1450																	W5
6	02567-MW10						1515																	W6
7	02567-MW11						1540																	W7
8	02567-MW9						1605																	W8
9	02567-MW8						1650																	W9
10	02567-MW2						1705																	010
11	02567-MW3						1720																	011
12	~~Field Blank~~ 1 PP Trip Blank						~~1730~~	PP	2															012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Phil Pike / ECS	4/19/13	730	ECS Office	4/19/13	730				
	ECS Office			[signature]	4/19/13	1145				
	[signature]	4/19/13	1320	Smoore Pace	4-19-13	1320	4.6	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4/17/13

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

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Page: 2 of 4

1668593

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13504 S. POINT BLVD	Copy To:	Company Name: ECS
CHARLOTTE NC		Address: AGAWAM MA
Email To: BSchaefer@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-2711 Fax:	Project Name: RHODES NORTH	Pace Project Manager: KEVIN HESSLING
Requested Due Date/TAT:	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 BTEX MTBE	1,2 DCA	8011 EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92155248
1	02567-MW4	WT	G			4/17	1800		7			X	X						X	X	X	X		013
2	02567-MW6					1	1830																	014
3	Field Blank 1					1	1730																	015
4	Field Blank 2					4/18	915																	016
5	02567-TW1						1015																	017
6	02567-MW5						1045																	018
7	02567-TW2						1130																	019
8	02567-MW14						1210																	020
9	02567-MW15						1615																	021
10	02567-MW16						1335																	022
11	Duplicate 1					-	-																	023
12	TRIP BLANK																							024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Report J values	[signature] /ECS	4/19/13	730	ECS OFFICE [signature]	4/19/13	730				
	ECS OFFICE [signature]	4/19/13	1320	[signature]	4/19	1145				
				[signature]	4-19	1320	4.6	y	n	y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Phil Bike
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4/18/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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Page: 3 of 4

1567468

Section A Required Client Information:

Company:	ECS
Address:	13804 S. POINT BLVD CHARLOTTE NC
Email To:	BSchaefer@ECSconsult.com
Phone:	201-583-272
Fax:	
Requested Due Date/TAT:	3-DAY

Section B Required Project Information:

Report To:	Brett Schaefer
Copy To:	
Purchase Order No.:	14-215778
Project Name:	RHODESWAY NORTH
Project Number:	14-215778

Section C Invoice Information:

Attention:	SUE STREETER
Company Name:	ECS
Address:	ARAWAM MA
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	

REGULATORY AGENCY

- ☐ NPDES
- ☐ GROUND WATER
- ☐ DRINKING WATER
- ☑ UST
- ☐ RCRA
- ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX MAN	Grainsize / Hydrometer	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92155248
1	02567-MW14-2	SL	C			4/15	1014		4										X			025
2	02567-MW15-2						1045												X			026
3	02567-MW16-2						1114												X			027
4	02567-TW2-4						1230												X			028
5	02567-TW1-4						1435												X			029
6	02567-MW7-10						1200		1											X	X	030
7	02567-RW1-4					4/16	910		4										X			031
8	02567-RW2-4						1025												X			032
9	02567-RW3-4						755												X			033
10	02567-MW17-4						1245												X			034
11	02567-TW2-35					4/17	800		1											X	X	035
12																						6

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Report J values	[signature] / ECS	4/19	730	ECS OFFICE	4/19	730	
	ECS Office			[signature] / Pace	4/19	1145	
	[signature] / Pace	4/19	1320	[signature] / Pace	4-19	1320	4.6 Y N Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Phil Pike
SIGNATURE of SAMPLER:	[signature]
DATE Signed (MM/DD/YY):	4/17/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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Page: 4 of 4

1435921

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13504 S. PAINT BLVD	Copy To:	Company Name: ECS
CHARLOTTE NC		Address: PEABODY MA
Email To: BSchaefer@ECSCAROLINAS.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-1274 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: KEVIN HERRING
Requested Due Date/TAT: 3 DAY	Project Number: 14.215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 BTEX MTBE	1,2 DCP	EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	O2567-WSW1				4/18	1640					X	X					X	X	X	X		92155248 036
2																						
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Report J values	Phil Pike / ECS	4/19/13	730	ECS OFFICE	4/19/13	730	
	ECS OFFICE				4/19/13	1115	
		4/19/13	1320		4-19	1320	4 Y N Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: Phil Pike

DATE Signed (MM/DD/YY): 4/18/13

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
4	Y	N	Y

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Sample Condition Upon Receipt (SCUR)	Document Revised: March 15, 2013 Page 1 of 2
	Document Number: F-CHR-CS-03-rev.10	Issuing Authority: Pace Huntersville Quality Office

Client Name: EIS

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1101 / T1102 **Type of Ice:** Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor T1101: No Correction T1102: No Correction

Corrected Cooler Temp.: 4.6 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: MH 4/19/13

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16.
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: Brent. Date/Time: 4/22/13

Comments/ Resolution: 3 DAY TAT ON ALL SAMPLES, WATERS NEED 8 OXYS AS WELL.

SCURF Review: CCH **Date:** 4/19/13

SRF Review: CCH **Date:** 4/22/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Place label here

OR

Handwrite project number (if no label available)

92155248

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May 08, 2013

Mr. Brett Schaefer
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: Rhodesway North
Pace Project No.: 92156508

Dear Mr. Schaefer:
Enclosed are the analytical results for sample(s) received by the laboratory on May 01, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: Rhodesway North
Pace Project No.: 92156508

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92156508

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92156508001	**02567-MW-18**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508002	**02567-MW-19**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508003	**02567-MW-20**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508004	**02567-MW-21**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508005	**02567-MW-22**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508006	**02567-SW-1**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508007	**02567-SW-2**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508008	**Duplicate 2**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508009	**Field Blank 1**	EPA 8011	RES	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 8260	KJM	20	PASI-C
92156508010	**Trip Blank**	EPA 8011	RES	2	PASI-C
		EPA 8260	KJM	20	PASI-C
92156508011	**02567-MW-18-3**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92156508012	**02567-MW-19-3**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92156508013	**02567-MW-20-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92156508014	**02567-MW-21-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92156508

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92156508015	**02567-MW-22-4**	EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-18 **Lab ID: 92156508001** Collected: 04/30/13 11:55 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	1	05/06/13 16:35	05/07/13 04:03	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	101	%	60-140	1	05/06/13 16:35	05/07/13 04:03	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**94.9**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:01	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 17:12	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 17:12	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 17:12	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 17:12	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 17:12	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 17:12	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 17:12	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 17:12	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 17:12	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 17:12	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 17:12	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 17:12	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 17:12	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 17:12	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 17:12	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 17:12	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 17:12	460-00-4	
Dibromofluoromethane (S)	98	%	70-130	1		05/06/13 17:12	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 17:12	17060-07-0	
Toluene-d8 (S)	97	%	70-130	1		05/06/13 17:12	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-19 **Lab ID: 92156508002** Collected: 04/30/13 11:25 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	1	05/02/13 18:45	05/03/13 01:05	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	69	%	60-140	1	05/02/13 18:45	05/03/13 01:05	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**30.2**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:14	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 17:28	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 17:28	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 17:28	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 17:28	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 17:28	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 17:28	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 17:28	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 17:28	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 17:28	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 17:28	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 17:28	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 17:28	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 17:28	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 17:28	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 17:28	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 17:28	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 17:28	460-00-4	
Dibromofluoromethane (S)	98	%	70-130	1		05/06/13 17:28	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 17:28	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		05/06/13 17:28	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-20 **Lab ID: 92156508003** Collected: 04/30/13 14:20 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:45	05/03/13 01:25	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	76	%	60-140	1	05/02/13 18:45	05/03/13 01:25	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**156**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:21	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**11700**	ug/L	100	1		05/06/13 17:44	75-85-4	E
tert-Amylmethyl ether	**12.7**	ug/L	10.0	1		05/06/13 17:44	994-05-8	
Benzene	**324**	ug/L	5.0	1		05/06/13 17:44	71-43-2	E
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 17:44	624-95-3	
tert-Butyl Alcohol	**11400**	ug/L	10000	100		05/07/13 21:22	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 17:44	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 17:44	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 17:44	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 17:44	64-17-5	
Ethylbenzene	**23.5**	ug/L	5.0	1		05/06/13 17:44	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 17:44	637-92-3	
Methyl-tert-butyl ether	**3250**	ug/L	500	100		05/07/13 21:22	1634-04-4	
Naphthalene	**16.8**	ug/L	5.0	1		05/06/13 17:44	91-20-3	
Toluene	**32.5**	ug/L	5.0	1		05/06/13 17:44	108-88-3	
m&p-Xylene	**417**	ug/L	10.0	1		05/06/13 17:44	179601-23-1	E
o-Xylene	**39.5**	ug/L	5.0	1		05/06/13 17:44	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	109	%	70-130	1		05/06/13 17:44	460-00-4	
Dibromofluoromethane (S)	97	%	70-130	1		05/06/13 17:44	1868-53-7	
1,2-Dichloroethane-d4 (S)	94	%	70-130	1		05/06/13 17:44	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		05/06/13 17:44	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-21 **Lab ID: 92156508004** Collected: 04/30/13 13:30 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:45	05/03/13 01:46	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	101	%	60-140	1	05/02/13 18:45	05/03/13 01:46	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**122**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:24	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**167**	ug/L	100	1		05/06/13 18:00	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 18:00	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 18:00	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 18:00	624-95-3	
tert-Butyl Alcohol	**507**	ug/L	100	1		05/06/13 18:00	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 18:00	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 18:00	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 18:00	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 18:00	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 18:00	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 18:00	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 18:00	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 18:00	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 18:00	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 18:00	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 18:00	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 18:00	460-00-4	
Dibromofluoromethane (S)	97	%	70-130	1		05/06/13 18:00	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 18:00	17060-07-0	
Toluene-d8 (S)	96	%	70-130	1		05/06/13 18:00	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-22 **Lab ID: 92156508005** Collected: 04/30/13 13:00 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:45	05/03/13 02:06	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	97	%	60-140	1	05/02/13 18:45	05/03/13 02:06	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**64.5**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:28	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 18:16	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 18:16	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 18:16	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 18:16	624-95-3	
tert-Butyl Alcohol	**128**	ug/L	100	1		05/06/13 18:16	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 18:16	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 18:16	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 18:16	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 18:16	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 18:16	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 18:16	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 18:16	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 18:16	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 18:16	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 18:16	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 18:16	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	106	%	70-130	1		05/06/13 18:16	460-00-4	
Dibromofluoromethane (S)	99	%	70-130	1		05/06/13 18:16	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 18:16	17060-07-0	
Toluene-d8 (S)	96	%	70-130	1		05/06/13 18:16	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-SW-1 **Lab ID: 92156508006** Collected: 04/30/13 12:20 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:45	05/03/13 02:26	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	99	%	60-140	1	05/02/13 18:45	05/03/13 02:26	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**8.4**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:31	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 18:32	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 18:32	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 18:32	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 18:32	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 18:32	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 18:32	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 18:32	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 18:32	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 18:32	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 18:32	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 18:32	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 18:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 18:32	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 18:32	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 18:32	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 18:32	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	106	%	70-130	1		05/06/13 18:32	460-00-4	
Dibromofluoromethane (S)	98	%	70-130	1		05/06/13 18:32	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 18:32	17060-07-0	
Toluene-d8 (S)	97	%	70-130	1		05/06/13 18:32	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-SW-2 **Lab ID: 92156508007** Collected: 04/30/13 12:30 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:46	05/03/13 03:27	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	98	%	60-140	1	05/02/13 18:46	05/03/13 03:27	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:43	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 18:47	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 18:47	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 18:47	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 18:47	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 18:47	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 18:47	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 18:47	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 18:47	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 18:47	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 18:47	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 18:47	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 18:47	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 18:47	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 18:47	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 18:47	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 18:47	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 18:47	460-00-4	
Dibromofluoromethane (S)	97	%	70-130	1		05/06/13 18:47	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 18:47	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		05/06/13 18:47	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: Duplicate 2 **Lab ID: 92156508008** Collected: 04/30/13 00:00 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:46	05/03/13 04:07	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	100	%	60-140	1	05/02/13 18:46	05/03/13 04:07	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	**122**	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:46	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	**10200**	ug/L	100	1		05/06/13 19:03	75-85-4	E
tert-Amylmethyl ether	**11.8**	ug/L	10.0	1		05/06/13 19:03	994-05-8	
Benzene	**323**	ug/L	5.0	1		05/06/13 19:03	71-43-2	E
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 19:03	624-95-3	
tert-Butyl Alcohol	**11000**	ug/L	10000	100		05/07/13 21:38	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 19:03	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 19:03	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 19:03	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 19:03	64-17-5	
Ethylbenzene	**24.4**	ug/L	5.0	1		05/06/13 19:03	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 19:03	637-92-3	
Methyl-tert-butyl ether	**3270**	ug/L	500	100		05/07/13 21:38	1634-04-4	
Naphthalene	**15.8**	ug/L	5.0	1		05/06/13 19:03	91-20-3	
Toluene	**32.9**	ug/L	5.0	1		05/06/13 19:03	108-88-3	
m&p-Xylene	**391**	ug/L	10.0	1		05/06/13 19:03	179601-23-1	
o-Xylene	**40.2**	ug/L	5.0	1		05/06/13 19:03	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	108	%	70-130	1		05/06/13 19:03	460-00-4	
Dibromofluoromethane (S)	96	%	70-130	1		05/06/13 19:03	1868-53-7	
1,2-Dichloroethane-d4 (S)	92	%	70-130	1		05/06/13 19:03	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		05/06/13 19:03	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: Field Blank 1 **Lab ID: 92156508009** Collected: 04/30/13 13:50 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:46	05/03/13 04:27	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	102	%	60-140	1	05/02/13 18:46	05/03/13 04:27	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Lead	ND	ug/L	5.0	1	05/03/13 15:40	05/07/13 14:50	7439-92-1	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 16:41	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 16:41	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 16:41	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 16:41	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 16:41	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 16:41	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 16:41	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 16:41	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 16:41	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 16:41	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 16:41	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 16:41	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 16:41	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 16:41	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 16:41	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 16:41	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 16:41	460-00-4	
Dibromofluoromethane (S)	98	%	70-130	1		05/06/13 16:41	1868-53-7	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		05/06/13 16:41	17060-07-0	
Toluene-d8 (S)	98	%	70-130	1		05/06/13 16:41	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: Trip Blank **Lab ID: 92156508010** Collected: 04/30/13 13:00 Received: 05/01/13 16:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011							
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	1	05/02/13 18:46	05/03/13 04:48	106-93-4	
Surrogates								
1-Chloro-2-bromopropane (S)	98	%	60-140	1	05/02/13 18:46	05/03/13 04:48	301-79-56	
8260 MSV	Analytical Method: EPA 8260							
tert-Amyl Alcohol	ND	ug/L	100	1		05/06/13 16:57	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	1		05/06/13 16:57	994-05-8	
Benzene	ND	ug/L	5.0	1		05/06/13 16:57	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	1		05/06/13 16:57	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	1		05/06/13 16:57	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	1		05/06/13 16:57	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1		05/06/13 16:57	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1		05/06/13 16:57	108-20-3	
Ethanol	ND	ug/L	200	1		05/06/13 16:57	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1		05/06/13 16:57	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	1		05/06/13 16:57	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1		05/06/13 16:57	1634-04-4	
Naphthalene	ND	ug/L	5.0	1		05/06/13 16:57	91-20-3	
Toluene	ND	ug/L	5.0	1		05/06/13 16:57	108-88-3	
m&p-Xylene	ND	ug/L	10.0	1		05/06/13 16:57	179601-23-1	
o-Xylene	ND	ug/L	5.0	1		05/06/13 16:57	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	105	%	70-130	1		05/06/13 16:57	460-00-4	
Dibromofluoromethane (S)	99	%	70-130	1		05/06/13 16:57	1868-53-7	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		05/06/13 16:57	17060-07-0	
Toluene-d8 (S)	97	%	70-130	1		05/06/13 16:57	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-18-3 **Lab ID: 92156508011** Collected: 04/29/13 16:10 Received: 05/01/13 16:50 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	5.1	1		05/02/13 19:22	71-43-2	
Ethylbenzene	ND	ug/kg	5.1	1		05/02/13 19:22	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	5.1	1		05/02/13 19:22	1634-04-4	
Naphthalene	ND	ug/kg	5.1	1		05/02/13 19:22	91-20-3	
Toluene	ND	ug/kg	5.1	1		05/02/13 19:22	108-88-3	
m&p-Xylene	ND	ug/kg	10.1	1		05/02/13 19:22	179601-23-1	
o-Xylene	ND	ug/kg	5.1	1		05/02/13 19:22	95-47-6	
Surrogates								
Dibromofluoromethane (S)	103	%	70-130	1		05/02/13 19:22	1868-53-7	
Toluene-d8 (S)	97	%	70-130	1		05/02/13 19:22	2037-26-5	
4-Bromofluorobenzene (S)	93	%	70-130	1		05/02/13 19:22	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	70-132	1		05/02/13 19:22	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**11.6**	%	0.10	1		05/02/13 13:21		

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-19-3 **Lab ID: 92156508012** Collected: 04/29/13 15:35 Received: 05/01/13 16:50 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.9	1		05/02/13 19:41	71-43-2	
Ethylbenzene	ND	ug/kg	4.9	1		05/02/13 19:41	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.9	1		05/02/13 19:41	1634-04-4	
Naphthalene	ND	ug/kg	4.9	1		05/02/13 19:41	91-20-3	
Toluene	ND	ug/kg	4.9	1		05/02/13 19:41	108-88-3	
m&p-Xylene	ND	ug/kg	9.9	1		05/02/13 19:41	179601-23-1	
o-Xylene	ND	ug/kg	4.9	1		05/02/13 19:41	95-47-6	
Surrogates								
Dibromofluoromethane (S)	103	%	70-130	1		05/02/13 19:41	1868-53-7	
Toluene-d8 (S)	99	%	70-130	1		05/02/13 19:41	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		05/02/13 19:41	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-132	1		05/02/13 19:41	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.0**	%	0.10	1		05/02/13 13:21		

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-20-4 **Lab ID: 92156508013** Collected: 04/29/13 13:50 Received: 05/01/13 16:50 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	5.0	1		05/02/13 20:00	71-43-2	1g
Ethylbenzene	ND	ug/kg	5.0	1		05/02/13 20:00	100-41-4	
Methyl-tert-butyl ether	**70.5**	ug/kg	5.0	1		05/02/13 20:00	1634-04-4	
Naphthalene	ND	ug/kg	5.0	1		05/02/13 20:00	91-20-3	
Toluene	ND	ug/kg	5.0	1		05/02/13 20:00	108-88-3	
m&p-Xylene	ND	ug/kg	10.0	1		05/02/13 20:00	179601-23-1	
o-Xylene	ND	ug/kg	5.0	1		05/02/13 20:00	95-47-6	
Surrogates								
Dibromofluoromethane (S)	103	%	70-130	1		05/02/13 20:00	1868-53-7	
Toluene-d8 (S)	98	%	70-130	1		05/02/13 20:00	2037-26-5	
4-Bromofluorobenzene (S)	87	%	70-130	1		05/02/13 20:00	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-132	1		05/02/13 20:00	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10.5**	%	0.10	1		05/02/13 13:21		

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-21-4 **Lab ID: 92156508014** Collected: 04/29/13 13:10 Received: 05/01/13 16:50 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	3.8	1		05/02/13 20:18	71-43-2	
Ethylbenzene	ND	ug/kg	3.8	1		05/02/13 20:18	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	3.8	1		05/02/13 20:18	1634-04-4	
Naphthalene	ND	ug/kg	3.8	1		05/02/13 20:18	91-20-3	
Toluene	ND	ug/kg	3.8	1		05/02/13 20:18	108-88-3	
m&p-Xylene	ND	ug/kg	7.6	1		05/02/13 20:18	179601-23-1	
o-Xylene	ND	ug/kg	3.8	1		05/02/13 20:18	95-47-6	
Surrogates								
Dibromofluoromethane (S)	105	%	70-130	1		05/02/13 20:18	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		05/02/13 20:18	2037-26-5	
4-Bromofluorobenzene (S)	91	%	70-130	1		05/02/13 20:18	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-132	1		05/02/13 20:18	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.0**	%	0.10	1		05/02/13 13:22		

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92156508

Sample: 02567-MW-22-4 **Lab ID: 92156508015** Collected: 04/29/13 12:30 Received: 05/01/13 16:50 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.5	1		05/02/13 20:37	71-43-2	
Ethylbenzene	ND	ug/kg	4.5	1		05/02/13 20:37	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.5	1		05/02/13 20:37	1634-04-4	
Naphthalene	ND	ug/kg	4.5	1		05/02/13 20:37	91-20-3	
Toluene	ND	ug/kg	4.5	1		05/02/13 20:37	108-88-3	
m&p-Xylene	ND	ug/kg	9.1	1		05/02/13 20:37	179601-23-1	
o-Xylene	ND	ug/kg	4.5	1		05/02/13 20:37	95-47-6	
Surrogates								
Dibromofluoromethane (S)	105	%	70-130	1		05/02/13 20:37	1868-53-7	
Toluene-d8 (S)	99	%	70-130	1		05/02/13 20:37	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		05/02/13 20:37	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-132	1		05/02/13 20:37	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**8.9**	%	0.10	1		05/02/13 13:22		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: MPRP/13222 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 92156508001, 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009

METHOD BLANK: 968252 Matrix: Water
Associated Lab Samples: 92156508001, 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	05/07/13 13:52	

MATRIX SPIKE SAMPLE: 968254

Parameter	Units	92156508001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	94.9	500	532	87	75-125	

SAMPLE DUPLICATE: 968255

Parameter	Units	92156508002 Result	Dup Result	RPD	Qualifiers
Lead	ug/L	30.2	30.7	2	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: MSV/22873 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92156508001, 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009, 92156508010

METHOD BLANK: 969119 Matrix: Water
Associated Lab Samples: 92156508001, 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009, 92156508010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	05/06/13 13:30	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	05/06/13 13:30	
Benzene	ug/L	ND	5.0	05/06/13 13:30	
Diisopropyl ether	ug/L	ND	5.0	05/06/13 13:30	
Ethanol	ug/L	ND	200	05/06/13 13:30	
Ethyl-tert-butyl ether	ug/L	ND	10.0	05/06/13 13:30	
Ethylbenzene	ug/L	ND	5.0	05/06/13 13:30	
m&p-Xylene	ug/L	ND	10.0	05/06/13 13:30	
Methyl-tert-butyl ether	ug/L	ND	5.0	05/06/13 13:30	
Naphthalene	ug/L	ND	5.0	05/06/13 13:30	
o-Xylene	ug/L	ND	5.0	05/06/13 13:30	
tert-Amyl Alcohol	ug/L	ND	100	05/06/13 13:30	
tert-Amylmethyl ether	ug/L	ND	10.0	05/06/13 13:30	
tert-Butyl Alcohol	ug/L	ND	100	05/06/13 13:30	
tert-Butyl Formate	ug/L	ND	50.0	05/06/13 13:30	
Toluene	ug/L	ND	5.0	05/06/13 13:30	
1,2-Dichloroethane-d4 (S)	%	97	70-130	05/06/13 13:30	
4-Bromofluorobenzene (S)	%	105	70-130	05/06/13 13:30	
Dibromofluoromethane (S)	%	98	70-130	05/06/13 13:30	
Toluene-d8 (S)	%	98	70-130	05/06/13 13:30	

LABORATORY CONTROL SAMPLE: 969120

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	41.7	83	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1030	103	70-130	
Benzene	ug/L	50	43.0	86	70-130	
Diisopropyl ether	ug/L	50	42.0	84	70-130	
Ethanol	ug/L	2000	2050	102	70-130	
Ethyl-tert-butyl ether	ug/L	100	78.5	79	70-130	
Ethylbenzene	ug/L	50	47.5	95	70-130	
m&p-Xylene	ug/L	100	95.0	95	70-130	
Methyl-tert-butyl ether	ug/L	50	47.8	96	70-130	
Naphthalene	ug/L	50	52.4	105	70-130	
o-Xylene	ug/L	50	46.7	93	70-130	
tert-Amyl Alcohol	ug/L	1000	1010	101	70-130	
tert-Amylmethyl ether	ug/L	100	89.6	90	70-130	
tert-Butyl Alcohol	ug/L	500	523	105	70-130	
tert-Butyl Formate	ug/L	400	352	88	70-130	
Toluene	ug/L	50	44.7	89	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

LABORATORY CONTROL SAMPLE: 969120

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			90	70-130	
4-Bromofluorobenzene (S)	%			107	70-130	
Dibromofluoromethane (S)	%			96	70-130	
Toluene-d8 (S)	%			96	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 969121 969122

Parameter	Units	92156508001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	52.0	49.1	104	98	70-130	6	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1360	1270	136	127	70-130	7	M1
Benzene	ug/L	ND	50	50	55.7	51.6	111	103	70-130	8	
Diisopropyl ether	ug/L	ND	50	50	58.7	56.6	117	113	70-130	4	
Ethanol	ug/L	ND	2000	2000	2980	2890	149	144	70-130	3	M1
Ethyl-tert-butyl ether	ug/L	ND	100	100	102	97.7	102	98	70-130	5	
Ethylbenzene	ug/L	ND	50	50	58.0	54.2	116	108	70-130	7	
m&p-Xylene	ug/L	ND	100	100	113	108	113	108	70-130	5	
Methyl-tert-butyl ether	ug/L	ND	50	50	58.2	55.4	116	111	70-130	5	
Naphthalene	ug/L	ND	50	50	55.6	54.3	111	109	70-130	2	
o-Xylene	ug/L	ND	50	50	55.7	53.0	111	106	70-130	5	
tert-Amyl Alcohol	ug/L	ND	1000	1000	1230	1140	123	114	70-130	8	
tert-Amylmethyl ether	ug/L	ND	100	100	106	101	106	101	70-130	5	
tert-Butyl Alcohol	ug/L	ND	500	500	765	767	153	153	70-130	0	M1
tert-Butyl Formate	ug/L	ND	400	400	247	8.2J	62	2	70-130		P5
Toluene	ug/L	ND	50	50	56.4	52.5	113	105	70-130	7	
1,2-Dichloroethane-d4 (S)	%						100	100	70-130		
4-Bromofluorobenzene (S)	%						99	99	70-130		
Dibromofluoromethane (S)	%						102	102	70-130		
Toluene-d8 (S)	%						101	100	70-130		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: MSV/22847 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92156508011, 92156508012, 92156508013, 92156508014, 92156508015

METHOD BLANK: 967219 Matrix: Solid
Associated Lab Samples: 92156508011, 92156508012, 92156508013, 92156508014, 92156508015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.4	05/02/13 16:33	
Ethylbenzene	ug/kg	ND	5.4	05/02/13 16:33	
m&p-Xylene	ug/kg	ND	10.8	05/02/13 16:33	
Methyl-tert-butyl ether	ug/kg	ND	5.4	05/02/13 16:33	
Naphthalene	ug/kg	ND	5.4	05/02/13 16:33	
o-Xylene	ug/kg	ND	5.4	05/02/13 16:33	
Toluene	ug/kg	ND	5.4	05/02/13 16:33	
1,2-Dichloroethane-d4 (S)	%	100	70-132	05/02/13 16:33	
4-Bromofluorobenzene (S)	%	96	70-130	05/02/13 16:33	
Dibromofluoromethane (S)	%	99	70-130	05/02/13 16:33	
Toluene-d8 (S)	%	102	70-130	05/02/13 16:33	

LABORATORY CONTROL SAMPLE: 967220

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	43.1	37.8	88	70-130	
Ethylbenzene	ug/kg	43.1	38.5	89	70-137	
m&p-Xylene	ug/kg	86.2	76.8	89	70-140	
Methyl-tert-butyl ether	ug/kg	43.1	38.2	89	45-150	
Naphthalene	ug/kg	43.1	48.8	113	70-148	
o-Xylene	ug/kg	43.1	39.2	91	70-141	
Toluene	ug/kg	43.1	37.3	87	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE SAMPLE: 967792

Parameter	Units	92156545002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	ND	43.6	44.0	101	50-166	
Toluene	ug/kg	ND	43.6	36.4	83	52-163	
1,2-Dichloroethane-d4 (S)	%				104	70-132	
4-Bromofluorobenzene (S)	%				83	70-130	
Dibromofluoromethane (S)	%				101	70-130	
Toluene-d8 (S)	%				94	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

SAMPLE DUPLICATE: 967791

Parameter	Units	92156508011 Result	Dup Result	RPD	Qualifiers
Benzene	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	109	103	15	
4-Bromofluorobenzene (S)	%	93	90	13	
Dibromofluoromethane (S)	%	103	100	13	
Toluene-d8 (S)	%	97	98	8	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: OEXT/21898 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009, 92156508010

METHOD BLANK: 967372 Matrix: Water
Associated Lab Samples: 92156508002, 92156508003, 92156508004, 92156508005, 92156508006, 92156508007, 92156508008, 92156508009, 92156508010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	05/02/13 23:44	
1-Chloro-2-bromopropane (S)	%	102	60-140	05/02/13 23:44	

LABORATORY CONTROL SAMPLE & LCSD: 967373 967374

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.29	0.31	102	108	60-140	5	20	
1-Chloro-2-bromopropane (S)	%				102	103	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 967375 967376

Parameter	Units	92156508006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.29	0.29	104	104	60-140	0	
1-Chloro-2-bromopropane (S)	%						102	101	60-140		

SAMPLE DUPLICATE: 967377

Parameter	Units	92156508007 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1-Chloro-2-bromopropane (S)	%	98	98	1	

REPORT OF LABORATORY ANALYSIS

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: OEXT/21940
QC Batch Method: EPA 8011
Analysis Method: EPA 8011
Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92156508001

METHOD BLANK: 968773 Matrix: Water
Associated Lab Samples: 92156508001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.019	05/06/13 22:38	
1-Chloro-2-bromopropane (S)	%	107	60-140	05/06/13 22:38	

LABORATORY CONTROL SAMPLE & LCSD: 968774 968775

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.30	0.33	106	116	60-140	10	20	
1-Chloro-2-bromopropane (S)	%				107	116	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 968776 968777

Parameter	Units	92156750005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.28	0.28	102	102	60-140	0	
1-Chloro-2-bromopropane (S)	%						101	100	60-140		

SAMPLE DUPLICATE: 968778

Parameter	Units	92156750006 Result	Dup Result	RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1-Chloro-2-bromopropane (S)	%	101	100	1	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92156508

QC Batch: PMST/5495 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92156508011, 92156508012, 92156508013, 92156508014, 92156508015

SAMPLE DUPLICATE: 966955

Parameter	Units	92156396008 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	21.7	21.2	2	

SAMPLE DUPLICATE: 966956

Parameter	Units	92156439001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	29.8	30.4	2	

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QUALIFIERS

Project: Rhodesway North
Pace Project No.: 92156508

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g	The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North
Pace Project No.: 92156508

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92156508001	**02567-MW-18**	EPA 8011	OEXT/21940	EPA 8011	GCSV/14525
92156508002	**02567-MW-19**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508003	**02567-MW-20**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508004	**02567-MW-21**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508005	**02567-MW-22**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508006	**02567-SW-1**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508007	**02567-SW-2**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508008	**Duplicate 2**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508009	**Field Blank 1**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508010	**Trip Blank**	EPA 8011	OEXT/21898	EPA 8011	GCSV/14513
92156508001	**02567-MW-18**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508002	**02567-MW-19**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508003	**02567-MW-20**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508004	**02567-MW-21**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508005	**02567-MW-22**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508006	**02567-SW-1**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508007	**02567-SW-2**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508008	**Duplicate 2**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508009	**Field Blank 1**	EPA 3010	MPRP/13222	EPA 6010	ICP/12042
92156508001	**02567-MW-18**	EPA 8260	MSV/22873		
92156508002	**02567-MW-19**	EPA 8260	MSV/22873		
92156508003	**02567-MW-20**	EPA 8260	MSV/22873		
92156508004	**02567-MW-21**	EPA 8260	MSV/22873		
92156508005	**02567-MW-22**	EPA 8260	MSV/22873		
92156508006	**02567-SW-1**	EPA 8260	MSV/22873		
92156508007	**02567-SW-2**	EPA 8260	MSV/22873		
92156508008	**Duplicate 2**	EPA 8260	MSV/22873		
92156508009	**Field Blank 1**	EPA 8260	MSV/22873		
92156508010	**Trip Blank**	EPA 8260	MSV/22873		
92156508011	**02567-MW-18-3**	EPA 8260	MSV/22847		
92156508012	**02567-MW-19-3**	EPA 8260	MSV/22847		
92156508013	**02567-MW-20-4**	EPA 8260	MSV/22847		
92156508014	**02567-MW-21-4**	EPA 8260	MSV/22847		
92156508015	**02567-MW-22-4**	EPA 8260	MSV/22847		
92156508011	**02567-MW-18-3**	ASTM D2974-87	PMST/5495		
92156508012	**02567-MW-19-3**	ASTM D2974-87	PMST/5495		
92156508013	**02567-MW-20-4**	ASTM D2974-87	PMST/5495		
92156508014	**02567-MW-21-4**	ASTM D2974-87	PMST/5495		
92156508015	**02567-MW-22-4**	ASTM D2974-87	PMST/5495		

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Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.10	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☑ yes RBP 5-1-13 ☑ no Seals intact: ☑ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1101 T1102 **Type of Ice:** Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor **T1101**: No Correction **T1102**: No Correction

Corrected Cooler Temp.: 0.7 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: RBP 5-1-13

Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out: 5-1-13 RBP	☑Yes ☑No ☐N/A	2. no times on COC → over
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes ☐No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☑No ☐N/A	12. 1 VIAL for MW20 date says 4-3
-Includes date/time/ID/Analysis Matrix: 5-1-13 RBP		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16. not our tb
Trip Blank Custody Seals Present	☐Yes ☑No ☐N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: Date: 5/1/13

SRF Review: Date: 5/2/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 92156508

92156508

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1604664

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Shaefer	Attention: SUE STREETER
Address: 13504 S POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ECS
		Address: AGAWAM MA
Email To: BShaefer@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704 583-2711 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: Kevin Herring
Requested Due Date/TAT: 5-DAY	Project Number: 14-215778	Pace Profile #: 3385-1, 7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX MON	1,2 DCA	8 oxygenates	8011 EDB	LEAD	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	02567-MW18	WT	G			4/30			7			X	X						X	X	X	X	X		001
2	02567-MW19	WT																							002
3	02567-MW20																								003
4	02567-MW21																								004
5	02567-MW22																								005
6	02567-SW1																								006
7	02567-SW2																								007
8	Duplicate 1																								008
9	Field Blank 1																								009
10	Trip Blank								2																010
11																									
12																									

92156508

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Report J values	[signature] / ECS	~~4/30/13~~ 5/1/13	730	ECS OFFICE	5/1/13	730	
	ECS OFFICE			S Moody - Pace	5-1-13	11:10	
	S Moody	5-1-13	16:50	[signature]	5/1/13	16:50	0.7 yr — yr

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 4/30/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1696911

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Brett Schaefer	Attention: SUE STREETER
Address: 13504 S. POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ECS Address: AGAWAM MA
Email To: 13Schaefer@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-2711 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: KEVIN HERRON
Requested Due Date/TAT: 5-DAY	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 BTEX MTBE	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	02567-MW 18-3	SL	C			4/29	1610											Y	X		011
2	02567-MW 19-3						1535														012
3	02567-MW 20-4						1350														013
4	02567-MW 21-4						1310														014
5	02567-MW 22-4						1230														015
6																					
7																					
8																					
9																					
10																					
11																					
12																					

92156508

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Report J VALUES	Phil Pike / ECS	5/1/13	730	ECS OFFICE	5/1/13	730				
	ECS OFFICE			D Moody - Pace	5-1-13	11:10				
	D Moody	5-1-13	16:50	[illegible]	5/1/13	16:50	0.7	~	~	~

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: Phil Pike

DATE Signed (MM/DD/YY): 4/30/13

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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April 22, 2013

Mr. Brett Schaefer
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: RHODESWAY NORTH
Pace Project No.: 92154189

Dear Mr. Schaefer:
Enclosed are the analytical results for sample(s) received by the laboratory on April 10, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

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SAMPLE ANALYTE COUNT

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92154189001	**02567-MW4-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189002	**02567-MW5-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189003	**02567-MW6-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189004	**02567-MW7-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189005	**02567-MW8-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189006	**02567-MW9-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189007	**02567-MW10-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189008	**02567-MW11-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189009	**02567-MW12-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92154189010	**02567-MW13-4**	EPA 8260	DLK	12	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW4-4 **Lab ID: 92154189001** Collected: 04/08/13 12:50 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	3.6	1		04/16/13 02:15	71-43-2	
Ethylbenzene	**5.6**	ug/kg	3.6	1		04/16/13 02:15	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	3.6	1		04/16/13 02:15	1634-04-4	
Naphthalene	ND	ug/kg	3.6	1		04/16/13 02:15	91-20-3	
Toluene	ND	ug/kg	3.6	1		04/16/13 02:15	108-88-3	
Xylene (Total)	ND	ug/kg	7.3	1		04/16/13 02:15	1330-20-7	
m&p-Xylene	ND	ug/kg	7.3	1		04/16/13 02:15	179601-23-1	
o-Xylene	ND	ug/kg	3.6	1		04/16/13 02:15	95-47-6	
Surrogates								
Dibromofluoromethane (S)	100	%	70-130	1		04/16/13 02:15	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		04/16/13 02:15	2037-26-5	
4-Bromofluorobenzene (S)	95	%	70-130	1		04/16/13 02:15	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-132	1		04/16/13 02:15	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**12.5**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW5-4 **Lab ID: 92154189002** Collected: 04/08/13 14:10 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**336**	ug/kg	297	50		04/16/13 02:34	71-43-2	D3
Ethylbenzene	**605**	ug/kg	297	50		04/16/13 02:34	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	297	50		04/16/13 02:34	1634-04-4	
Naphthalene	ND	ug/kg	297	50		04/16/13 02:34	91-20-3	
Toluene	ND	ug/kg	297	50		04/16/13 02:34	108-88-3	
Xylene (Total)	**1890**	ug/kg	594	50		04/16/13 02:34	1330-20-7	
m&p-Xylene	**1440**	ug/kg	594	50		04/16/13 02:34	179601-23-1	
o-Xylene	**452**	ug/kg	297	50		04/16/13 02:34	95-47-6	
Surrogates								
Dibromofluoromethane (S)	90	%	70-130	50		04/16/13 02:34	1868-53-7	
Toluene-d8 (S)	104	%	70-130	50		04/16/13 02:34	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130	50		04/16/13 02:34	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-132	50		04/16/13 02:34	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**15.3**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW6-4 **Lab ID: 92154189003** Collected: 04/08/13 15:25 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**90.5**	ug/kg	4.5	1		04/16/13 18:40	71-43-2	
Ethylbenzene	**26.9**	ug/kg	4.5	1		04/16/13 18:40	100-41-4	
Methyl-tert-butyl ether	**30.0**	ug/kg	4.5	1		04/16/13 18:40	1634-04-4	
Naphthalene	**8.9**	ug/kg	4.5	1		04/16/13 18:40	91-20-3	
Toluene	**7.8**	ug/kg	4.5	1		04/16/13 18:40	108-88-3	
Xylene (Total)	**160**	ug/kg	9.0	1		04/16/13 18:40	1330-20-7	
m&p-Xylene	**118**	ug/kg	9.0	1		04/16/13 18:40	179601-23-1	
o-Xylene	**41.6**	ug/kg	4.5	1		04/16/13 18:40	95-47-6	
Surrogates								
Dibromofluoromethane (S)	98	%	70-130	1		04/16/13 18:40	1868-53-7	
Toluene-d8 (S)	100	%	70-130	1		04/16/13 18:40	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130	1		04/16/13 18:40	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-132	1		04/16/13 18:40	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10.7**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW7-4 **Lab ID: 92154189004** Collected: 04/08/13 16:25 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.8	1		04/16/13 03:12	71-43-2	
Ethylbenzene	ND	ug/kg	4.8	1		04/16/13 03:12	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.8	1		04/16/13 03:12	1634-04-4	
Naphthalene	ND	ug/kg	4.8	1		04/16/13 03:12	91-20-3	
Toluene	ND	ug/kg	4.8	1		04/16/13 03:12	108-88-3	
Xylene (Total)	ND	ug/kg	9.7	1		04/16/13 03:12	1330-20-7	
m&p-Xylene	ND	ug/kg	9.7	1		04/16/13 03:12	179601-23-1	
o-Xylene	ND	ug/kg	4.8	1		04/16/13 03:12	95-47-6	
Surrogates								
Dibromofluoromethane (S)	96	%	70-130	1		04/16/13 03:12	1868-53-7	
Toluene-d8 (S)	101	%	70-130	1		04/16/13 03:12	2037-26-5	
4-Bromofluorobenzene (S)	89	%	70-130	1		04/16/13 03:12	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-132	1		04/16/13 03:12	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**9.8**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW8-4 **Lab ID: 92154189005** Collected: 04/08/13 17:15 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	ND	ug/kg	4.3	1		04/16/13 03:31	71-43-2	
Ethylbenzene	ND	ug/kg	4.3	1		04/16/13 03:31	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	4.3	1		04/16/13 03:31	1634-04-4	
Naphthalene	ND	ug/kg	4.3	1		04/16/13 03:31	91-20-3	
Toluene	ND	ug/kg	4.3	1		04/16/13 03:31	108-88-3	
Xylene (Total)	ND	ug/kg	8.6	1		04/16/13 03:31	1330-20-7	
m&p-Xylene	ND	ug/kg	8.6	1		04/16/13 03:31	179601-23-1	
o-Xylene	ND	ug/kg	4.3	1		04/16/13 03:31	95-47-6	
Surrogates								
Dibromofluoromethane (S)	97	%	70-130	1		04/16/13 03:31	1868-53-7	
Toluene-d8 (S)	99	%	70-130	1		04/16/13 03:31	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		04/16/13 03:31	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-132	1		04/16/13 03:31	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**11.2**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW9-4 **Lab ID: 92154189006** Collected: 04/09/13 07:30 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**3410**	ug/kg	852	200		04/16/13 21:29	71-43-2	
Ethylbenzene	**5130**	ug/kg	852	200		04/16/13 21:29	100-41-4	
Methyl-tert-butyl ether	**19100**	ug/kg	852	200		04/16/13 21:29	1634-04-4	
Naphthalene	**4900**	ug/kg	852	200		04/16/13 21:29	91-20-3	
Toluene	**16200**	ug/kg	852	200		04/16/13 21:29	108-88-3	
Xylene (Total)	**30900**	ug/kg	1700	200		04/16/13 21:29	1330-20-7	
m&p-Xylene	**21600**	ug/kg	1700	200		04/16/13 21:29	179601-23-1	
o-Xylene	**9290**	ug/kg	852	200		04/16/13 21:29	95-47-6	
Surrogates								
Dibromofluoromethane (S)	94	%	70-130	200		04/16/13 21:29	1868-53-7	
Toluene-d8 (S)	104	%	70-130	200		04/16/13 21:29	2037-26-5	
4-Bromofluorobenzene (S)	99	%	70-130	200		04/16/13 21:29	460-00-4	
1,2-Dichloroethane-d4 (S)	109	%	70-132	200		04/16/13 21:29	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10.4**	%	0.10	1		04/11/13 13:38		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW10-4 **Lab ID: 92154189007** Collected: 04/09/13 09:00 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**28.9**	ug/kg	4.7	1		04/17/13 00:00	71-43-2	
Ethylbenzene	ND	ug/kg	4.7	1		04/17/13 00:00	100-41-4	
Methyl-tert-butyl ether	**364**	ug/kg	79.4	20		04/17/13 14:47	1634-04-4	
Naphthalene	**7.0**	ug/kg	4.7	1		04/17/13 00:00	91-20-3	
Toluene	ND	ug/kg	4.7	1		04/17/13 00:00	108-88-3	
Xylene (Total)	ND	ug/kg	9.3	1		04/17/13 00:00	1330-20-7	
m&p-Xylene	ND	ug/kg	9.3	1		04/17/13 00:00	179601-23-1	
o-Xylene	ND	ug/kg	4.7	1		04/17/13 00:00	95-47-6	
Surrogates								
Dibromofluoromethane (S)	92	%	70-130	1		04/17/13 00:00	1868-53-7	
Toluene-d8 (S)	102	%	70-130	1		04/17/13 00:00	2037-26-5	
4-Bromofluorobenzene (S)	94	%	70-130	1		04/17/13 00:00	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-132	1		04/17/13 00:00	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**9.7**	%	0.10	1		04/11/13 13:39		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW11-4 **Lab ID: 92154189008** Collected: 04/09/13 10:50 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**686**	ug/kg	222	50		04/17/13 12:54	71-43-2	
Ethylbenzene	**106**	ug/kg	4.1	1		04/17/13 00:18	100-41-4	
Methyl-tert-butyl ether	**2500**	ug/kg	222	50		04/17/13 12:54	1634-04-4	
Naphthalene	**8.7**	ug/kg	4.1	1		04/17/13 00:18	91-20-3	
Toluene	**15.7**	ug/kg	4.1	1		04/17/13 00:18	108-88-3	
Xylene (Total)	**304**	ug/kg	8.3	1		04/17/13 00:18	1330-20-7	
m&p-Xylene	**235**	ug/kg	8.3	1		04/17/13 00:18	179601-23-1	
o-Xylene	**69.4**	ug/kg	4.1	1		04/17/13 00:18	95-47-6	
Surrogates								
Dibromofluoromethane (S)	93	%	70-130	1		04/17/13 00:18	1868-53-7	
Toluene-d8 (S)	99	%	70-130	1		04/17/13 00:18	2037-26-5	
4-Bromofluorobenzene (S)	90	%	70-130	1		04/17/13 00:18	460-00-4	
1,2-Dichloroethane-d4 (S)	118	%	70-132	1		04/17/13 00:18	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**9.6**	%	0.10	1		04/11/13 13:39		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW12-4 **Lab ID: 92154189009** Collected: 04/09/13 11:55 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**614**	ug/kg	248	50		04/17/13 00:37	71-43-2	D3
Ethylbenzene	ND	ug/kg	248	50		04/17/13 00:37	100-41-4	
Methyl-tert-butyl ether	**3320**	ug/kg	248	50		04/17/13 00:37	1634-04-4	
Naphthalene	ND	ug/kg	248	50		04/17/13 00:37	91-20-3	
Toluene	**785**	ug/kg	248	50		04/17/13 00:37	108-88-3	
Xylene (Total)	**889**	ug/kg	497	50		04/17/13 00:37	1330-20-7	
m&p-Xylene	**629**	ug/kg	497	50		04/17/13 00:37	179601-23-1	
o-Xylene	**260**	ug/kg	248	50		04/17/13 00:37	95-47-6	
Surrogates								
Dibromofluoromethane (S)	85	%	70-130	50		04/17/13 00:37	1868-53-7	
Toluene-d8 (S)	103	%	70-130	50		04/17/13 00:37	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	50		04/17/13 00:37	460-00-4	
1,2-Dichloroethane-d4 (S)	90	%	70-132	50		04/17/13 00:37	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**14.7**	%	0.10	1		04/11/13 13:39		

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ANALYTICAL RESULTS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Sample: 02567-MW13-4 **Lab ID: 92154189010** Collected: 04/09/13 10:00 Received: 04/10/13 16:20 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Benzene	**355**	ug/kg	247	50		04/17/13 00:56	71-43-2	D3
Ethylbenzene	**1730**	ug/kg	247	50		04/17/13 00:56	100-41-4	
Methyl-tert-butyl ether	ND	ug/kg	247	50		04/17/13 00:56	1634-04-4	
Naphthalene	**1840**	ug/kg	247	50		04/17/13 00:56	91-20-3	
Toluene	ND	ug/kg	247	50		04/17/13 00:56	108-88-3	
Xylene (Total)	ND	ug/kg	495	50		04/17/13 00:56	1330-20-7	
m&p-Xylene	ND	ug/kg	495	50		04/17/13 00:56	179601-23-1	
o-Xylene	ND	ug/kg	247	50		04/17/13 00:56	95-47-6	
Surrogates								
Dibromofluoromethane (S)	84	%	70-130	50		04/17/13 00:56	1868-53-7	
Toluene-d8 (S)	105	%	70-130	50		04/17/13 00:56	2037-26-5	
4-Bromofluorobenzene (S)	96	%	70-130	50		04/17/13 00:56	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-132	50		04/17/13 00:56	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**10**	%	0.10	1		04/11/13 13:39		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: RHODESWAY NORTH
Pace Project No.: 92154189

QC Batch: MSV/22637 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92154189001, 92154189002, 92154189004, 92154189005

METHOD BLANK: 956323 Matrix: Solid
Associated Lab Samples: 92154189001, 92154189002, 92154189004, 92154189005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.3	04/15/13 17:09	
Ethylbenzene	ug/kg	ND	5.3	04/15/13 17:09	
m&p-Xylene	ug/kg	ND	10.5	04/15/13 17:09	
Methyl-tert-butyl ether	ug/kg	ND	5.3	04/15/13 17:09	
Naphthalene	ug/kg	ND	5.3	04/15/13 17:09	
o-Xylene	ug/kg	ND	5.3	04/15/13 17:09	
Toluene	ug/kg	ND	5.3	04/15/13 17:09	
Xylene (Total)	ug/kg	ND	10.5	04/15/13 17:09	
1,2-Dichloroethane-d4 (S)	%	106	70-132	04/15/13 17:09	
4-Bromofluorobenzene (S)	%	96	70-130	04/15/13 17:09	
Dibromofluoromethane (S)	%	109	70-130	04/15/13 17:09	
Toluene-d8 (S)	%	102	70-130	04/15/13 17:09	

LABORATORY CONTROL SAMPLE: 956324

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	48.8	51.0	105	70-130	
Ethylbenzene	ug/kg	48.8	55.8	114	70-137	
m&p-Xylene	ug/kg	97.7	114	117	70-140	
Methyl-tert-butyl ether	ug/kg	48.8	57.8	118	45-150	
Naphthalene	ug/kg	48.8	45.9	94	70-148	
o-Xylene	ug/kg	48.8	54.7	112	70-141	
Toluene	ug/kg	48.8	53.3	109	70-130	
Xylene (Total)	ug/kg	146	169	115	70-141	
1,2-Dichloroethane-d4 (S)	%			106	70-132	
4-Bromofluorobenzene (S)	%			102	70-130	
Dibromofluoromethane (S)	%			103	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE SAMPLE: 956898

Parameter	Units	92154189005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	ND	47.7	53.9	113	50-166	
Toluene	ug/kg	ND	47.7	48.4	99	52-163	
1,2-Dichloroethane-d4 (S)	%				109	70-132	
4-Bromofluorobenzene (S)	%				86	70-130	
Dibromofluoromethane (S)	%				100	70-130	
Toluene-d8 (S)	%				97	70-130	

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QUALITY CONTROL DATA

Project: RHODESWAY NORTH
Pace Project No.: 92154189

SAMPLE DUPLICATE: 956897

Parameter	Units	92154189004 Result	Dup Result	RPD	Qualifiers
Benzene	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	2.9J		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
Toluene	ug/kg	ND	2.7J		
Xylene (Total)	ug/kg	ND	4.2J		
1,2-Dichloroethane-d4 (S)	%	106	104	28	
4-Bromofluorobenzene (S)	%	89	89	27	
Dibromofluoromethane (S)	%	96	98	25	
Toluene-d8 (S)	%	101	98	29	

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QUALITY CONTROL DATA

Project: RHODESWAY NORTH
Pace Project No.: 92154189

QC Batch: MSV/22660 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92154189003, 92154189006, 92154189007, 92154189008, 92154189009, 92154189010

METHOD BLANK: 957235 Matrix: Solid
Associated Lab Samples: 92154189003, 92154189006, 92154189007, 92154189008, 92154189009, 92154189010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	04/16/13 16:29	
Ethylbenzene	ug/kg	ND	5.0	04/16/13 16:29	
m&p-Xylene	ug/kg	ND	10.0	04/16/13 16:29	
Methyl-tert-butyl ether	ug/kg	ND	5.0	04/16/13 16:29	
Naphthalene	ug/kg	ND	5.0	04/16/13 16:29	
o-Xylene	ug/kg	ND	5.0	04/16/13 16:29	
Toluene	ug/kg	ND	5.0	04/16/13 16:29	
Xylene (Total)	ug/kg	ND	10.0	04/16/13 16:29	
1,2-Dichloroethane-d4 (S)	%	105	70-132	04/16/13 16:29	
4-Bromofluorobenzene (S)	%	95	70-130	04/16/13 16:29	
Dibromofluoromethane (S)	%	98	70-130	04/16/13 16:29	
Toluene-d8 (S)	%	100	70-130	04/16/13 16:29	

LABORATORY CONTROL SAMPLE: 957236

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	50	57.4	115	70-130	
Ethylbenzene	ug/kg	50	57.3	115	70-137	
m&p-Xylene	ug/kg	100	117	117	70-140	
Methyl-tert-butyl ether	ug/kg	50	58.8	118	45-150	
Naphthalene	ug/kg	50	54.7	109	70-148	
o-Xylene	ug/kg	50	56.8	114	70-141	
Toluene	ug/kg	50	56.4	113	70-130	
Xylene (Total)	ug/kg	150	174	116	70-141	
1,2-Dichloroethane-d4 (S)	%			101	70-132	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			100	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 957591

Parameter	Units	92154507001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	<4.4	46.2	52.9	114	50-166	
Toluene	ug/kg	<4.4	46.2	50.7	110	52-163	
1,2-Dichloroethane-d4 (S)	%				101	70-132	
4-Bromofluorobenzene (S)	%				92	70-130	
Dibromofluoromethane (S)	%				93	70-130	
Toluene-d8 (S)	%				100	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RHODESWAY NORTH
Pace Project No.: 92154189

SAMPLE DUPLICATE: 957590

Parameter	Units	92154183007 Result	Dup Result	RPD	Qualifiers
Benzene	ug/kg	<1.5	ND		
Ethylbenzene	ug/kg	<1.6	ND		
m&p-Xylene	ug/kg	<3.3	ND		
Methyl-tert-butyl ether	ug/kg	<1.4	ND		
Naphthalene	ug/kg	<1.1	ND		
o-Xylene	ug/kg	<1.7	ND		
Toluene	ug/kg	<1.6	ND		
Xylene (Total)	ug/kg	<3.3	ND		
1,2-Dichloroethane-d4 (S)	%	105	107	14	
4-Bromofluorobenzene (S)	%	93	90	9	
Dibromofluoromethane (S)	%	95	96	12	
Toluene-d8 (S)	%	99	98	11	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: RHODESWAY NORTH
Pace Project No.: 92154189

QC Batch: PMST/5445 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92154189001, 92154189002, 92154189003, 92154189004, 92154189005, 92154189006, 92154189007, 92154189008, 92154189009, 92154189010

SAMPLE DUPLICATE: 954305

Parameter	Units	92154065001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	13.5	13.0	3	

SAMPLE DUPLICATE: 954306

Parameter	Units	92153961001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	10.1	10.0	1	

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: RHODESWAY NORTH
Pace Project No.: 92154189

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

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(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RHODESWAY NORTH
Pace Project No.: 92154189

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92154189001	**02567-MW4-4**	EPA 8260	MSV/22637		
92154189002	**02567-MW5-4**	EPA 8260	MSV/22637		
92154189003	**02567-MW6-4**	EPA 8260	MSV/22660		
92154189004	**02567-MW7-4**	EPA 8260	MSV/22637		
92154189005	**02567-MW8-4**	EPA 8260	MSV/22637		
92154189006	**02567-MW9-4**	EPA 8260	MSV/22660		
92154189007	**02567-MW10-4**	EPA 8260	MSV/22660		
92154189008	**02567-MW11-4**	EPA 8260	MSV/22660		
92154189009	**02567-MW12-4**	EPA 8260	MSV/22660		
92154189010	**02567-MW13-4**	EPA 8260	MSV/22660		
92154189001	**02567-MW4-4**	ASTM D2974-87	PMST/5445		
92154189002	**02567-MW5-4**	ASTM D2974-87	PMST/5445		
92154189003	**02567-MW6-4**	ASTM D2974-87	PMST/5445		
92154189004	**02567-MW7-4**	ASTM D2974-87	PMST/5445		
92154189005	**02567-MW8-4**	ASTM D2974-87	PMST/5445		
92154189006	**02567-MW9-4**	ASTM D2974-87	PMST/5445		
92154189007	**02567-MW10-4**	ASTM D2974-87	PMST/5445		
92154189008	**02567-MW11-4**	ASTM D2974-87	PMST/5445		
92154189009	**02567-MW12-4**	ASTM D2974-87	PMST/5445		
92154189010	**02567-MW13-4**	ASTM D2974-87	PMST/5445		

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Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.10	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other_____

Thermometer Used: IR Gun T1101 T1102 **Type of Ice:** Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor **T1101**: No Correction **T1102**: No Correction

Corrected Cooler Temp.: 2.0 C

Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No N/A

Comments:

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: 4/10

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: SL		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☑N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

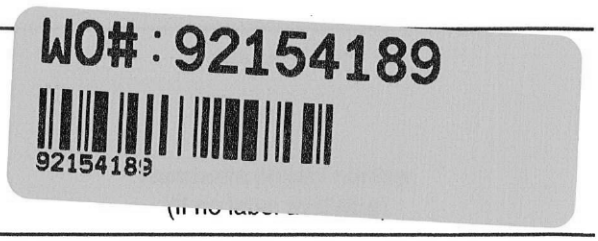
Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: QW **Date:** 4/10/13

SRF Review: AMB **Date:** 4/11/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)



(if no label)

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1502106

Section A Required Client Information:

Company:	ECS
Address:	13504 S POINT BLVD CHARLOTTE NC
Email To:	Bschaefer@ECSconsult.com
Phone:	704-504 279
Fax:	
Requested Due Date/TAT:	5-DAY

Section B Required Project Information:

Report To:	Brett SCHAEFER
Copy To:	
Purchase Order No.:	14-215778
Project Name:	RHODESWAY NORTH
Project Number:	14-215778

Section C Invoice Information:

Attention:	SUE STREETER
Company Name:	ECS
Address:	AGAWAM MA
Pace Quote Reference:	
Pace Project Manager:	Kevin Herring
Pace Profile #:	3385-2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N) 8260 BTEX MSN	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92154189
1	02567-MW4-4	WT	G			4/8	1250									X		X		001
2	02567-MW5-4					4/8	1410													002
3	02567-MW6-4					4/8	1525													003
4	02567-MW7-4					4/8	1625													004
5	02567-MW8-4					4/8	1715													005
6	02567-MW9-4					4/9	730													006
7	02567-MW10-4					4/9	900													007
8	02567-MW11-4					4/9	1050													008
9	02567-MW12-4					4/9	1155													009
10	02567-MW13-4					4/9	1000													010
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Report J values	Philip Pike / ECS	4/10/13	800	ECS OFFICE	4/10/13	8:00				
	ECS OFFICE			G Moody - Pace	4-10-13	10:35				
	G Moody	4-10-13	16:20	G Moody Pace	4-10-13	1620	2.0	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 4/9/13

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

SHIELD
ENGINEERING, INC.

April 29, 2013

Mr. Kevin Herring
Pace Analytical Labs
9800 Kincey Avenue
Suite 100
Huntersville, North Carolina 28078

Subject: **Laboratory Test Results**
Pace Workorder: 92155248
Shield Job Number: 1100026-01
LRF # 13-059

Dear Mr. Herring:

As requested Shield Engineering Inc., has completed the laboratory testing on the above referenced project. The test results for Grain Size Analysis with Hydrometer are attached to this letter.

The laboratory tests were provided in accordance with the applicable ASTM Standards. The test samples were obtained by a representative of Shield Engineering, and then delivered to Shield's Charlotte, North Carolina laboratory for testing.

If you have any questions concerning our test results, please do not hesitate to call our office at (704) 394-6913.

Sincerely,

Shield Engineering, Inc.

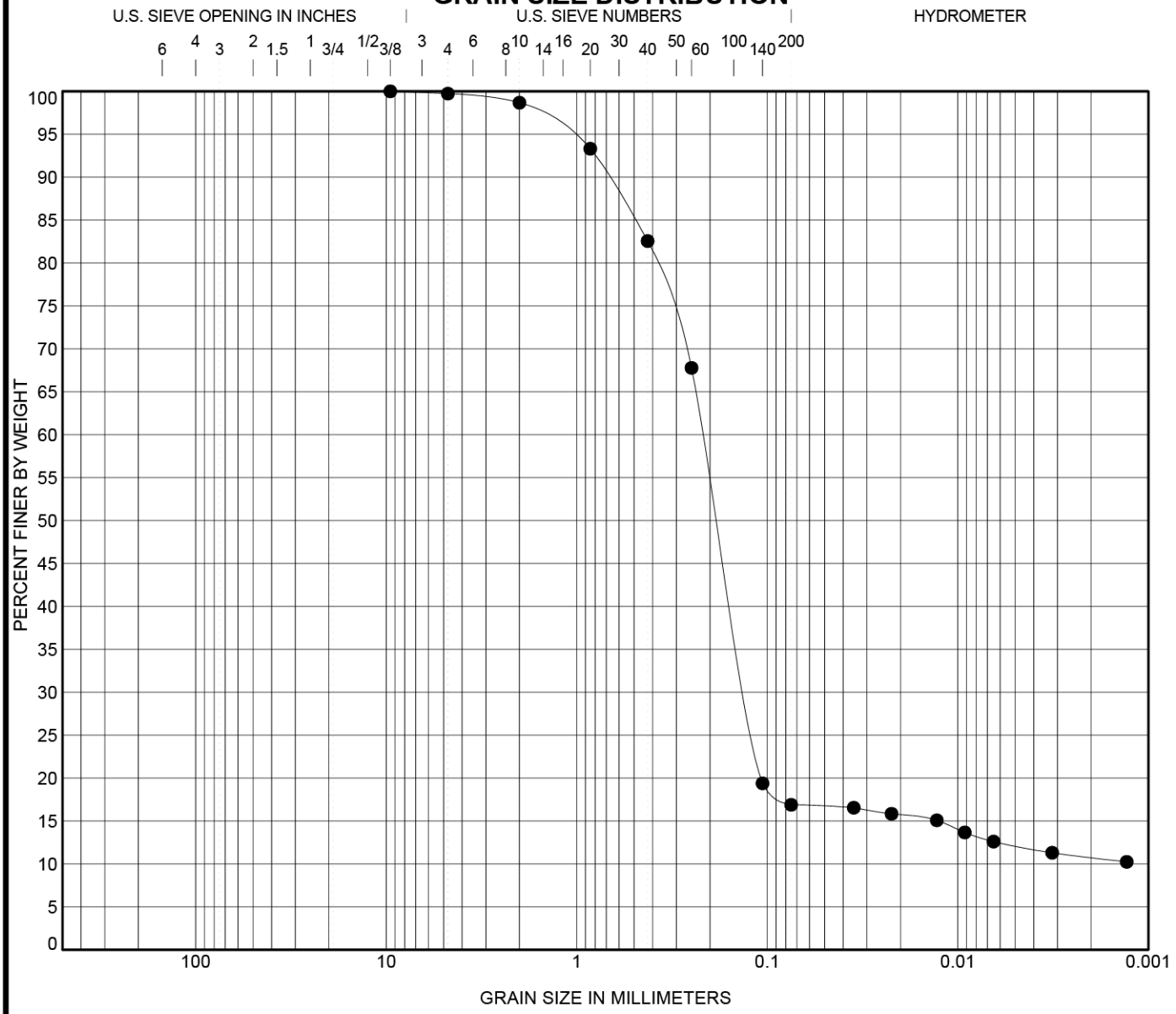
Josh Slusarczyk
Laboratory Manager

4301 Taggart Creek Road
Charlotte, NC 28208

www.shieldengineering.com

Telephone 704.394.6913
Fax 704.394.6968

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

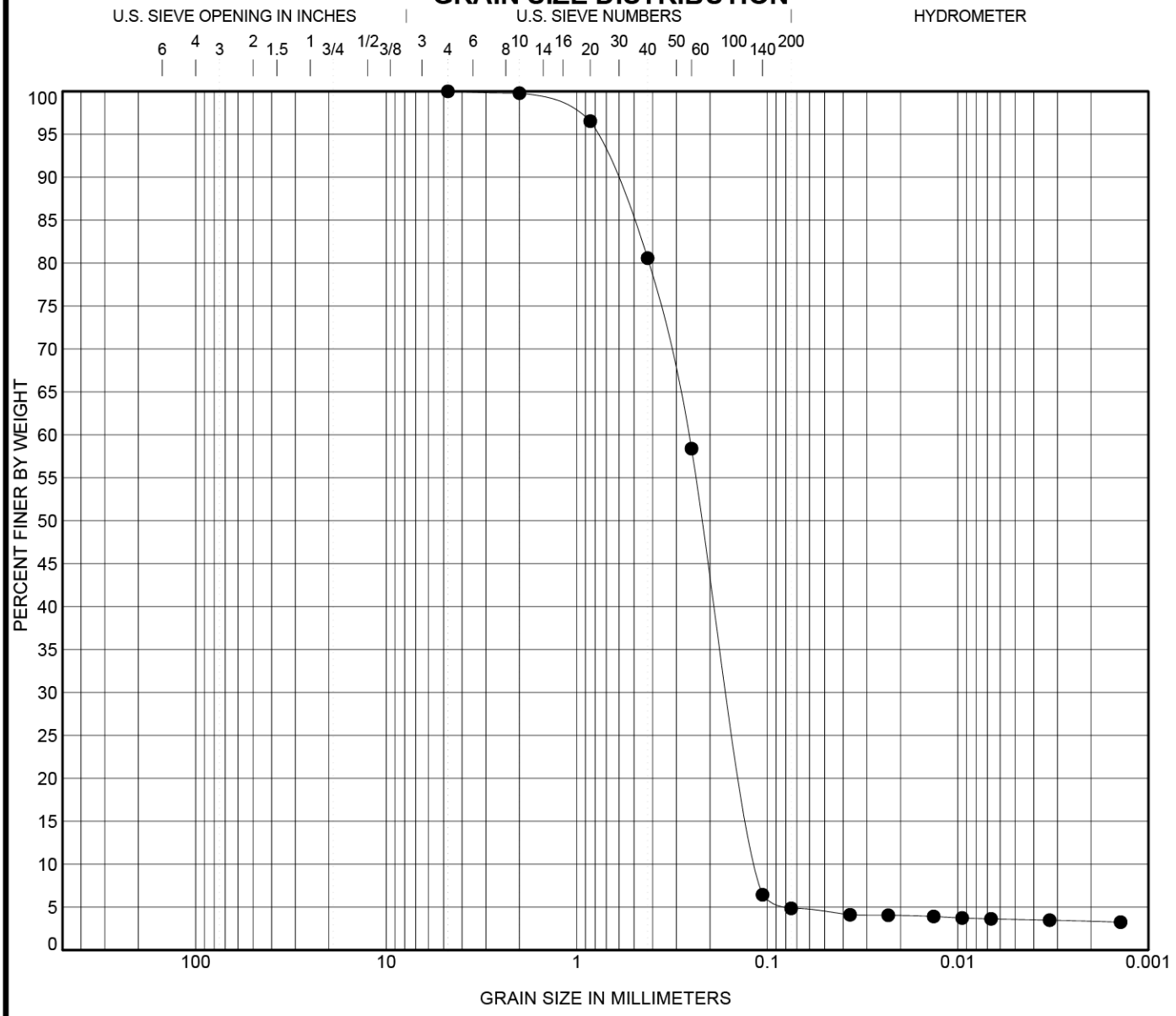
	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**02567-MW-7-10 -'**						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**02567-MW-7-10 -'**	**9.525**	**0.218**	**0.128**		**0.3**	**82.8**	**4.8**	**12.1**

SHIELD ENGINEERING, INC.
4301 Taggart Creek Road
Charlotte, NC 28208
Telephone: 704-394-6913
Toll Free: 800-395-5220
Fax: 704-394-6968

Pace Project No.: 92155248
Pace Lab ID: 92155248030
Pace Analytical
Shield Project No.: 1100026-01

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**02567-TW-2-35 -'**	**POORLY GRADED SAND(SP)**				**0.84**	**2.31**

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**02567-TW-2-35 -'**	**4.75**	**0.26**	**0.156**	**0.112**	**0.0**	**95.1**	**1.3**	**3.6**

SHIELD ENGINEERING, INC.
4301 Taggart Creek Road
Charlotte, NC 28208
Telephone: 704-394-6913
Toll Free: 800-395-5220
Fax: 704-394-6968

Pace Project No.: 92155248
Pace Lab ID: 92155248035
Pace Analytical
Shield Project No.: 1100026-01

APPENDIX C

TAX MAP INFORMATION

NOT APPLICABLE

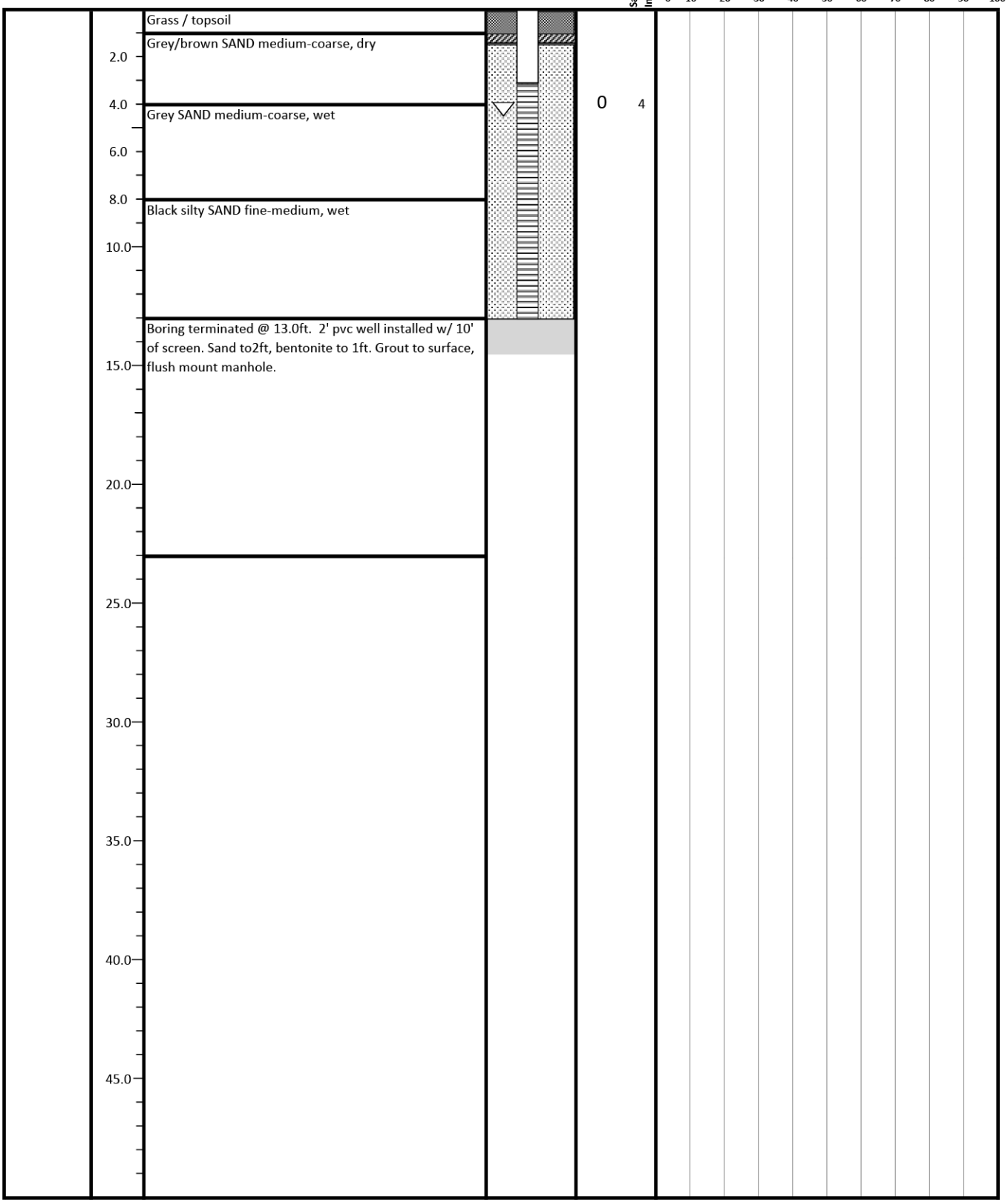
APPENDIX D

BORING LOGS

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet



REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-4
DATE STARTED: 4/8/2013
DATE COMPLETED: 4/8/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Concrete/fill				
	2.0	Tan SAND medium-coarse, dry				
	4.0	Brown SAND medium-coarse, wet		50.5	4	
	6.0					
	8.0					
	10.0	Black silty SAND fine-medium, wet				
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-5
DATE STARTED: 4/8/2013
DATE COMPLETED: 4/8/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Grass/ topsoil				
	2.0	Tan/brown SAND medium-coarse, dry				
	4.0	Brown SAND fine-medium, wet		38.8	4	
	6.0					
	8.0	Grey silty SAND fine-medium, wet				
	10.0					
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-6
DATE STARTED: 4/8/2013
DATE COMPLETED: 4/8/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Tan/brown SAND medium-coarse, dry				
	4.0	Grey/brown SAND medium-coarse,wet		3.9	4	
	8.0	Black silty SAND fine-medium, wet				
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-7
DATE STARTED: 4/8/2013
DATE COMPLETED: 4/8/2013
PROJECT NUMBER: 14-215778

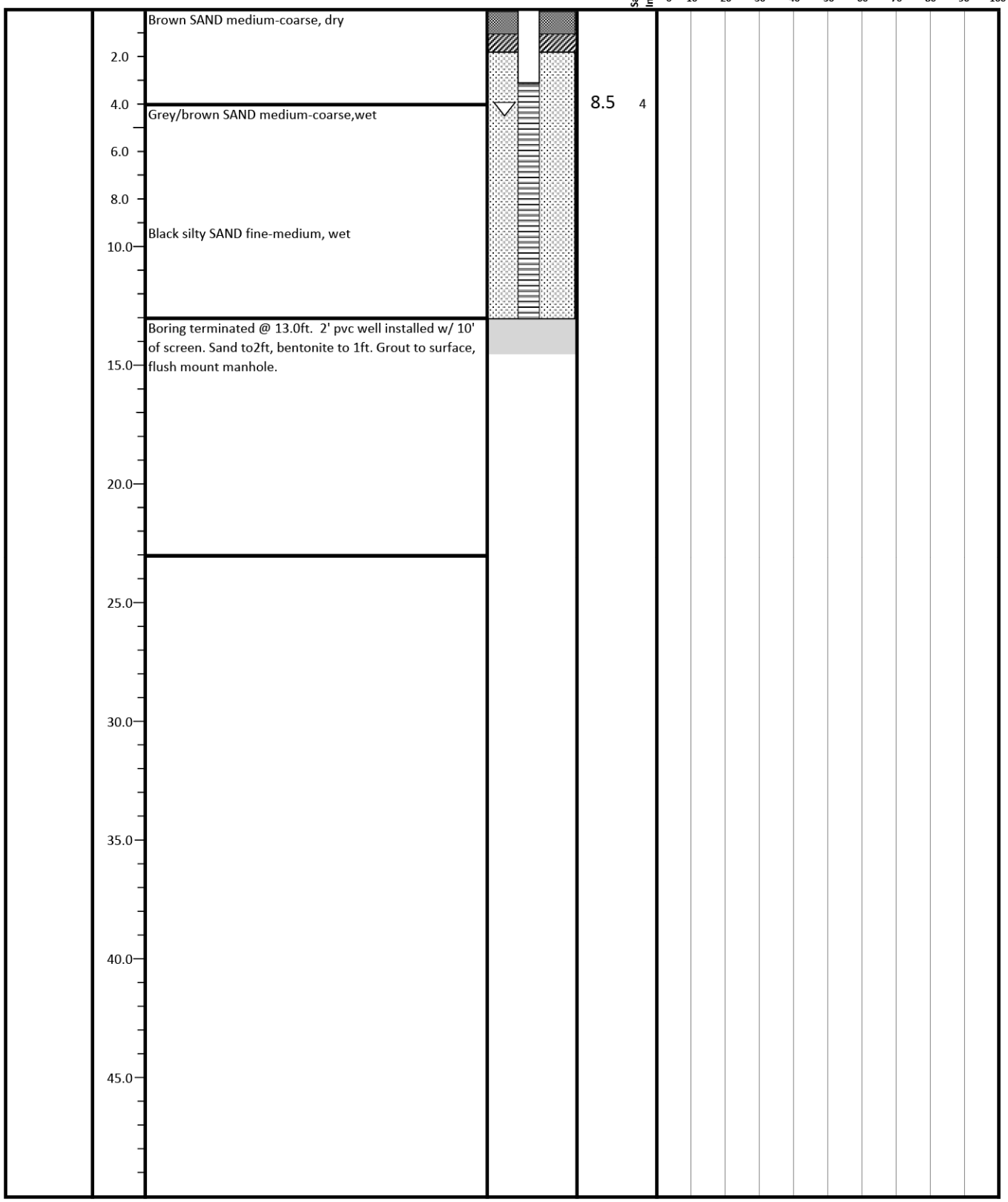
Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet



REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-8
DATE STARTED: 4/8/2013
DATE COMPLETED: 4/8/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	1.0	grey?brown SAND medium-coarse, dry				
	2.0					
	3.0	tan SAND medium-coarse dry				
	4.0	same-wet		1669	4	
	5.0					
	6.0	Black/grey silty SAND fine-medium, wet				
	7.0					
	8.0					
	9.0					
	10.0					
	11.0					
	12.0					
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	14.0					
	15.0					
	16.0					
	17.0					
	18.0					
	19.0					
	20.0					
	21.0					
	22.0					
	23.0					
	24.0					
	25.0					
	26.0					
	27.0					
	28.0					
	29.0					
	30.0					
	31.0					
	32.0					
	33.0					
	34.0					
	35.0					
	36.0					
	37.0					
	38.0					
	39.0					
	40.0					
	41.0					
	42.0					
	43.0					
	44.0					
	45.0					
	46.0					
	47.0					
	48.0					
	49.0					
	50.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-9
DATE STARTED: 4/9/2013
DATE COMPLETED: 4/9/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	0.5	Brown SAND medium-coarse, wet				
	2.0					
	4.0			20.9	4	
	4.5	same - wet				
	6.0					
	6.5	Black silty SAND fine-medium, wet				
	8.0					
	10.0					
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-10
DATE STARTED: 4/9/2013
DATE COMPLETED: 4/9/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium-coarse, dry				
	2.0	Brown / grey SAND medium-coarse,dry				
	4.0	Tan / brown SAND medium-coarse, wet		240.0	4	
	6.0					
	8.0	Black silty SAND fine-medium, wet				
	10.0					
		Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-11
DATE STARTED: 4/9/2013
DATE COMPLETED: 4/9/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	0.5	Tan/brown SAND medium-coarse,dry				
	4.0	Brown SAND medium-coarse,wet		257.0	4	
	6.0	Black silty SAND fine-medium, wet				
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-12
DATE STARTED: 4/9/2013
DATE COMPLETED: 4/9/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium-coarse, dry				
	2.0					
	4.0	same - wet		437.0	4	
	6.0					
	8.0					
		Black silty SAND fine-medium, wet				
	10.0					
		Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 7822 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: GEX - Vince Federle
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-13
DATE STARTED: 4/9/2013
DATE COMPLETED: 4/9/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	2.0	Black /grey silty SAND medium-coarse moist		0.0	2	
	4.0	same wet				
	6.0	Boring terminated at 5.0'. 2" pvc well set at 5.0 ' w/ 3.5' screen, sand to 1', bentonite to .5'. Stick up well.				
	8.0					
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with hand auger 4" bucket.
Borehole diameter approximately 4.5".
Stick up well.
Geologic Exploration - GEX

DRILLED BY: GEX -Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-14
DATE STARTED: 4/15/2013
DATE COMPLETED: 4/15/2013
PROJECT NUMBER: 14-215778

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Black /grey silty SAND medium-coarse moist				
	2.0	Black silty SAND medium-coarse wet		0.0	2	
	4.0					
	6.0					
	8.0	Boring terminated at 8.0'. 2" pvc well set to 8.0' w/ 5' of screen. Sand 2', bentonite to 1'. Stick up well.				
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with hand auger 4" bucket.
Borehole diameter approximately 4.5".
Stick up well.
Geologic Exploration - GEX

DRILLED BY: GEX -Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-15
DATE STARTED: 4/15/2013
DATE COMPLETED: 4/15/2013
PROJECT NUMBER: 14-215778

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Tan silty SAND medium-coarse moist				
	2.0	Black silty SAND medium-coarse wet		0.0	2	
	4.0					
	6.0					
	8.0	Boring terminated at 8.0'. 2" pvc well set to 8.0' w/ 5' of screen. Sand 2', bentonite to 1'. Stick up well.				
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with hand auger 4" bucket.
Borehole diameter approximately 4.5".
Stick up well.
Geologic Exploration - GEX

DRILLED BY: GEX -Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-16
DATE STARTED: 4/15/2013
DATE COMPLETED: 4/15/2013
PROJECT NUMBER: 14-215778

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	0.5	Brown SAND medium-coarse, dry				
	2.0					
	4.0	same wet		203.0	4	
	6.0					
	8.0					
	10.0	Grey silty SAND medium - fine wet				
	13.0	Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-17
DATE STARTED: 4/16/2013
DATE COMPLETED: 4/16/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

- GW level @ time of boring
- Hand Auger
- Standard Penetration Test
- Asphalt/Concrete
- Fill
- Clay
- Silt
- Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Brown SAND medium coarse dry				
	2.0	Grey SAND medium - coarse		0.0	2	
	4.0	same wet				
	6.0					
	8.0					
	10.0	Black siltySAND medium - fine wet.				
	12.0	Boring terminated @ 12.0ft. 2' pvc well installed w/ 10' of screen. Sand to1.5ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-18
DATE STARTED: 4/29/2013
DATE COMPLETED: 4/29/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Grass/ topsoil				
		Grey SAND medium-coarse moist		0.0	2	
	2.0					
		same wet				
	4.0					
	6.0					
	8.0					
		Black siltySAND medium - fine wet.				
	10.0					
		Boring terminated @ 12.0ft. 2' pvc well installed w/ 10' of screen. Sand to1.5ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-19
DATE STARTED: 4/29/2013
DATE COMPLETED: 4/29/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium- coarse dry				
	2.0					
	4.0	same moist		17.0	4	
	6.0	same wet				
	8.0					
	10.0	Black silty SAND medium-fine wet.				
		Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to 2.0ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-20
DATE STARTED: 4/29/2013
DATE COMPLETED: 4/29/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium- coarse dry				
	2.0					
	4.0	same moist		0.0	4	
	6.0	same wet				
	8.0					
	10.0	Black silty SAND medium-fine wet.				
		Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to 2.0ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-21
DATE STARTED: 4/29/2013
DATE COMPLETED: 4/29/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium- coarse dry				
	2.0					
	4.0	same moist		0.0	4	
	6.0	same wet				
	8.0					
	10.0	Black silty SAND medium-fine wet.				
		Boring terminated @ 13.0ft. 2' pvc well installed w/ 10' of screen. Sand to 2.0ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 4.25" H.S. Augers
Borehole diameter approximately 8".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-22
DATE STARTED: 4/29/2013
DATE COMPLETED: 4/29/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Grey /Brown SAND medium-coarse dry				
	2.0	Brown SAND medium-coarse dry				
	4.0	same wet		310.0	4	
	6.0					
	8.0	Black silty SAND medium-fine wet				
	10.0					
		Boring terminated @ 13.0ft. 4" pvc well installed w/ 10' of screen. Sand to 2.0ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 8.25" H.S. Augers
Borehole diameter approximately12".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

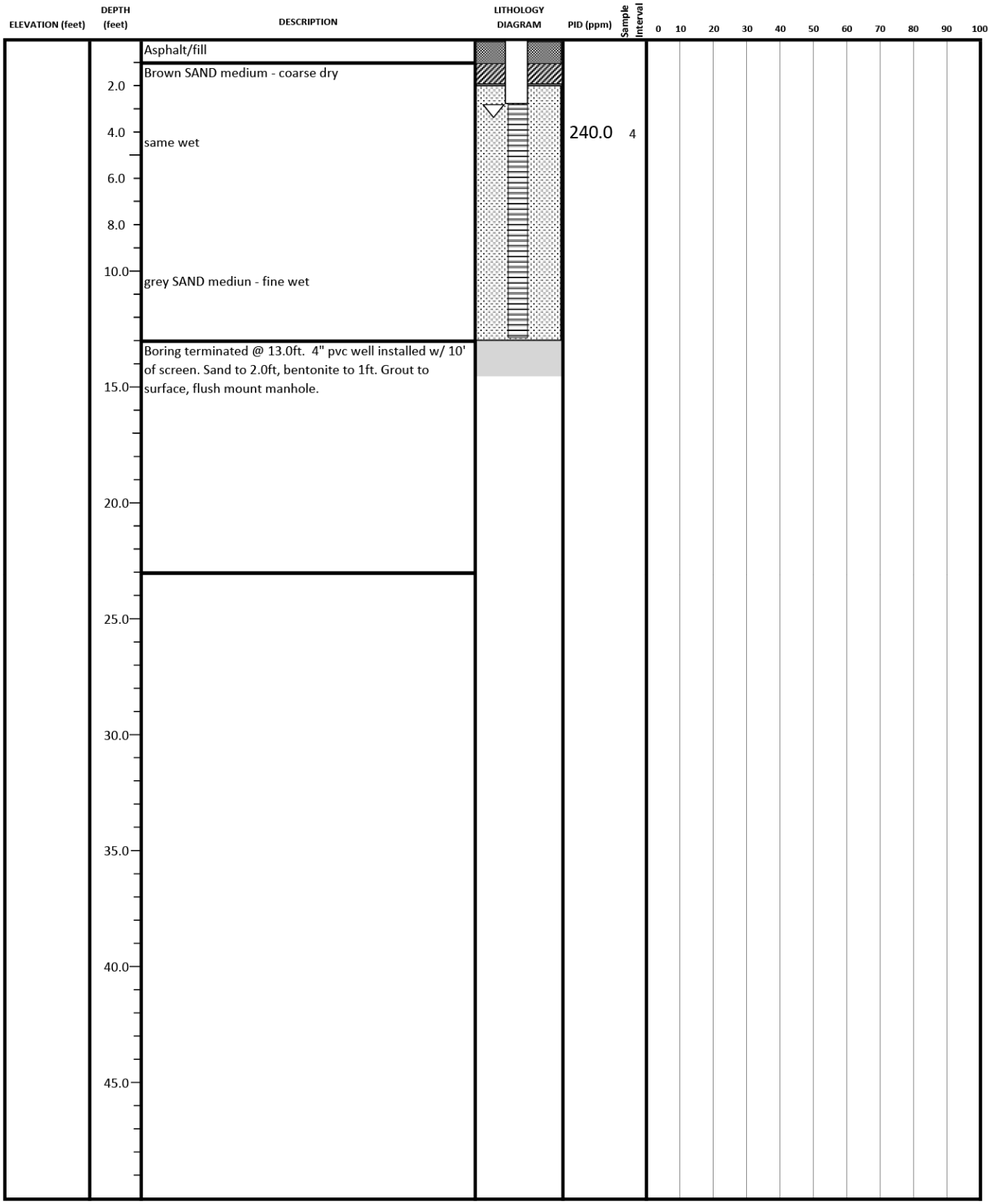
BORING NUMBER: RW-1
DATE STARTED: 4/16/2013
DATE COMPLETED: 4/16/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet



REMARKS: Drilled with D-120 w/ 8.25" H.S. Augers
Borehole diameter approximately12".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: RW-2
DATE STARTED: 4/16/2013
DATE COMPLETED: 4/16/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		Brown SAND medium - coarse dry				
	2.0					
	4.0	same wet		159.0	4	
	6.0	grey SAND medium - coarse wet				
	8.0	Black silty SAND medium-fine wet				
	10.0					
		Boring terminated @ 13.0ft. 4" pvc well installed w/ 10' of screen. Sand to 2.0ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with D-120 w/ 8.25" H.S. Augers
Borehole diameter approximately12".

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

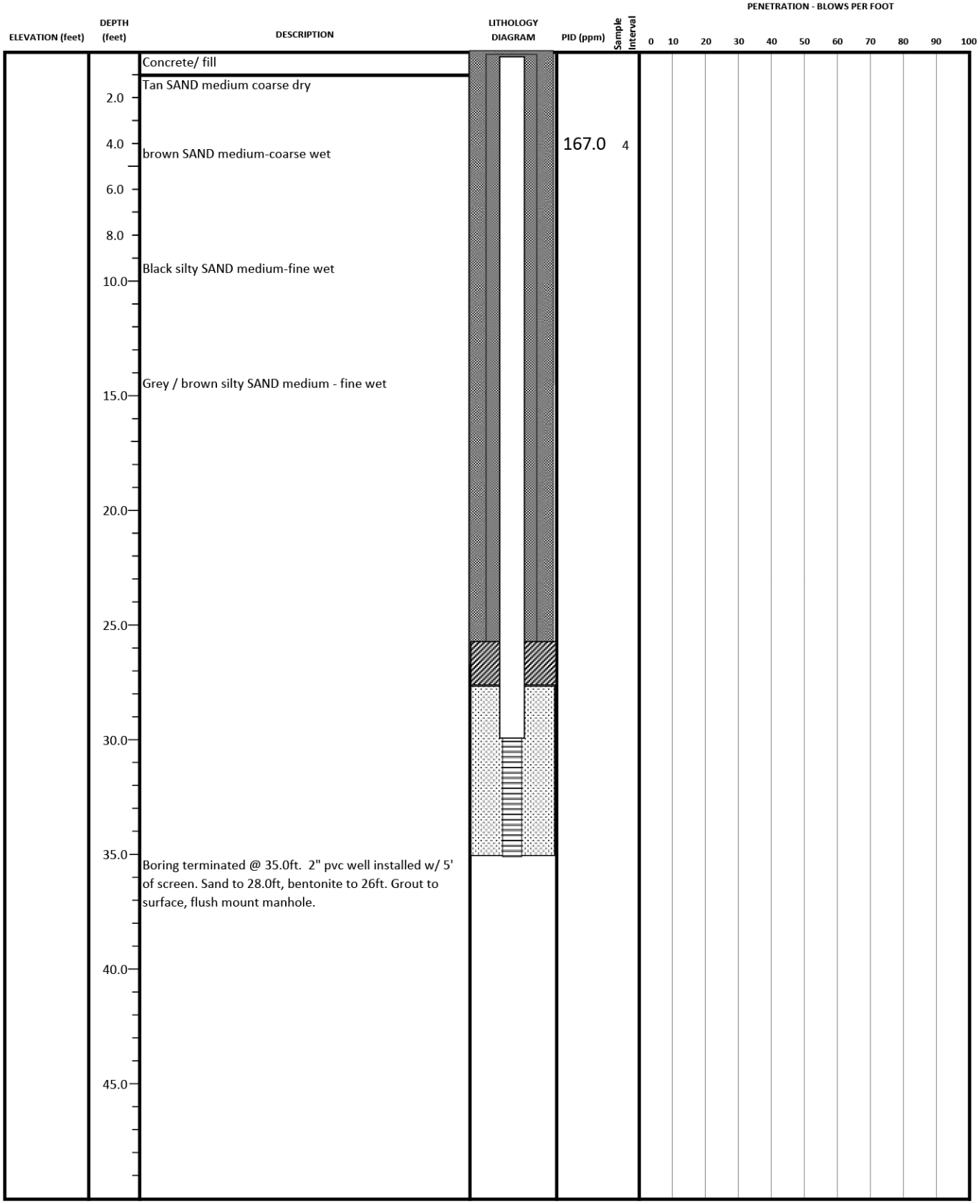
BORING NUMBER: RW-3
DATE STARTED: 4/16/2013
DATE COMPLETED: 4/16/2013
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX
GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet



REMARKS: Casing drilled with D-120 w/ 8.25" H.S. Augers
Borehole diameter approximately 12".
Finished well install by mud rotary.
Geologic Exploration - GEX

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: TW-1
DATE STARTED: 4/15/2013
DATE COMPLETED: 4/17/2013
PROJECT NUMBER: 14-215778

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt / fill				
	1.0	Tan SAND medium coarse dry				
	2.0					
	4.0	Grey / brown SAND medium-coarse wet		107.0	4	
	6.0					
	8.0	Black silty SAND medium - fine wet				
	10.0					
	15.0	Tan / grey silty SAND medium-fine wet				
	20.0					
	25.0					
	30.0					
	35.0	Boring terminated @ 35.0ft. 2" pvc well installed w/ 5' of screen. Sand to 28.0ft, bentonite to 26ft. Grout to surface, flush mount manhole.				
	40.0					
	45.0					

REMARKS:
Casing drilled with D-120 w/ 8.25" H.S. Augers
Borehole diameter approximately 12".
Finished well install by mud rotary.
Geologic Exploration - GEX

DRILLED BY: Mark Gettys
LOGGED BY: ECS - P. Pike

BORING NUMBER: TW-2
DATE STARTED: 4/15/2013
DATE COMPLETED: 4/17/2013
PROJECT NUMBER: 14-215778

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

APPENDIX E

WELL CONSTRUCTION RECORDS

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE. PROTECT. PROSPER.

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 17.77" Longitude: 80° 39' 56.06"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-4

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TOPSOIL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/08/13 Date Completed: 04/08/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle (Well Driller) Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.31" Longitude: 80° 39' 56.68"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-5

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
CONCRETE/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/08/13
13.0 ft. Date Completed: 04/08/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Date: 04/18/13
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE. PROTECT. PROSPER.

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.72" Longitude: 80° 39' 55.78"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-6

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TOPSOIL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/08/13 Date Completed: 04/08/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle (Well Driller) Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.89" Longitude: 80° 39' 56.06"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-7

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TOPSOIL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/08/13 Date Completed: 04/08/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 20.14" Longitude: 80° 39' 56.96"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-8

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TOPSOIL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/08/13
13.0 ft. Date Completed: 04/08/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Date: 04/18/13
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.31" Longitude: 80° 39' 57.72"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-9

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ASPHALT/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/09/13
13.0 ft. Date Completed: 04/09/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.34" Longitude: 80° 39' 57.08"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-10

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ASPHALT/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/09/13 Date Completed: 04/09/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.60" Longitude: 80° 39' 57.02"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-11

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ASPHALT/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/09/13 Date Completed: 04/09/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.94" Longitude: 80° 39' 55.90"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-12

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ASPHALT/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/09/13
13.0 ft. Date Completed: 04/09/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.48" Longitude: 80° 39' 56.74"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-13

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
ASPHALT/GRAVEL	1.0	1.0
GRAY SAND	12.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/09/13
13.0 ft. Date Completed: 04/09/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: VINCE FEDERLE **CERT. NO.:** 01930
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Vincent R. Federle Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 20.45" Longitude: 80° 39' 55.38"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-14

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK SAND	5.0	5.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 1.5 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 5.0 ft. Date Started: 04/15/13 Date Completed: 04/15/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 2.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☑ Below ☐
Surface 2.5 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 3.0 FEET
Set Between: 2.0 ft. and 5.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 1.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 1.5 ft. to 5.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 20.41" Longitude: 80° 39' 54.56"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-15

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK SAND	8.0	8.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 8.0 ft. Date Started: 04/15/13 Date Completed: 04/15/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☑ Below ☐
Surface 2.5 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 5.0 FEET
Set Between: 3.0 ft. and 8.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 1.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 8.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.07" Longitude: 80° 39' 53.70"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-16

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK SAND	8.0	8.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 8.0 ft. Date Started: 04/15/13 Date Completed: 04/15/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☑ Below ☐
Surface 2.5 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 5.0 FEET
Set Between: 3.0 ft. and 8.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 1.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 8.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.87" Longitude: 80° 39' 55.90"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-17

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SAND	5.0	5.0
GRAY/TAN SAND	8.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/13 Date Completed: 04/16/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.74" Longitude: 80° 39' 56.40"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** RW-1

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SAND	5.0	5.0
GRAY SAND	8.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/13 Date Completed: 04/16/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
4.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 4 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.18" Longitude: 80° 39' 56.44"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** RW-2

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SAND	5.0	5.0
GRAY/WHITE SAND	8.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/13 Date Completed: 04/16/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
4.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 4 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Date: 04/18/13
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.04" Longitude: 80° 39' 56.32"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** RW-3

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BROWN SAND	5.0	5.0
GRAY SAND	8.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/13 Date Completed: 04/16/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
4.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 4 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 04/18/13

If D Level Driller, provide supervising driller's name:

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.17" Longitude: 80° 39' 56.34"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** TW-1

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK/BROWN SAND	6.0	6.0
GRAY SAND	3.0	9.0
LIGHT GRAY/ORANGE SAND	11.0	20.0
GRAY CLAYEY SAND	15.0	35.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 26.0 TO 28.0 FT. 6" PVC SURFACE CASING GROUTED FROM 0.0 TO 27.0 FT

6. TYPE: ☑ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 35.0 ft. Date Started: 04/15/13 Date Completed: 04/17/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH/6 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 30.0 ft. depth
6.0 in. to 27.0 ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 5.0 FEET
Set Between: 30.0 ft. and 35.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 28.0 ft. to 35.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 26.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Date: 04/18/13
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.56" Longitude: 80° 39' 56.26"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** TW-2

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK/BROWN SAND	5.0	5.0
GRAY SAND	4.0	9.0
LIGHT GRAY/ORANGE SAND	11.0	20.0
GRAY CLAYEY SAND	15.0	35.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 26.0 TO 28.0 FT. 6" PVC SURFACE CASING GROUTED FROM 0.0 TO 27.0 FT

6. TYPE: ☑ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 35.0 ft. Date Started: 04/15/13 Date Completed: 04/17/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH/6 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 30.0 ft. depth
6.0 in. to 27.0 ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 5.0 FEET
Set Between: 30.0 ft. and 35.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 28.0 ft. to 35.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 26.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Mark K Gettys

Signed: _____ Date: 04/18/13
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 21.33" Longitude: 80° 39' 57.40"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-18

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TAN SAND	2.0	2.0
BLACK SAND	10.0	12.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 1.5 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 12.0 ft. Date Started: 04/29/13 Date Completed: 04/29/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 2.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 2.0 ft. and 12.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 3.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 1.5 ft. to 12.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 05/06/13

If D Level Driller, provide supervising driller's name:

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 21.07" Longitude: 80° 39' 56.54"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-19

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TAN SAND	2.0	2.0
GRAY SAND	10.0	12.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 1.5 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 12.0 ft. Date Started: 04/29/13 Date Completed: 04/29/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 2.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 2.0 ft. and 12.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 3.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 1.5 ft. to 12.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 05/06/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.15" Longitude: 80° 39' 55.92"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-20

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TAN SAND	2.0	2.0
BLACK SAND	11.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/29/13 Date Completed: 04/29/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 05/06/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.56" Longitude: 80° 39' 54.88"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-21

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TAN SAND	2.0	2.0
GRAY SAND	10.0	12.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 1.5 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 04/29/13
12.0 ft. Date Completed: 04/29/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 2.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 2.0 ft. and 12.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 3.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 1.5 ft. to 12.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ____ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☑ B ☐ C ☐ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 05/06/13

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFRIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 18.59" Longitude: 80° 39' 54.12"

3. PUBLIC SYSTEM NAME: 02567 **PUBLIC SYSTEM NUMBER:** MW-22

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
TAN SAND	2.0	2.0
BLACK SAND	11.0	13.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
BENTONITE SEAL FROM 1.0 TO 2.0 FEET

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24730

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/29/13 Date Completed: 04/29/13

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 4.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: MARK GETTYS **CERT. NO.:** 01086
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A B C D (circle one) ☑ ☐ ☐ ☐
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: Mark K Gettys Well Driller Date: 05/06/13

If D Level Driller, provide supervising driller's name:

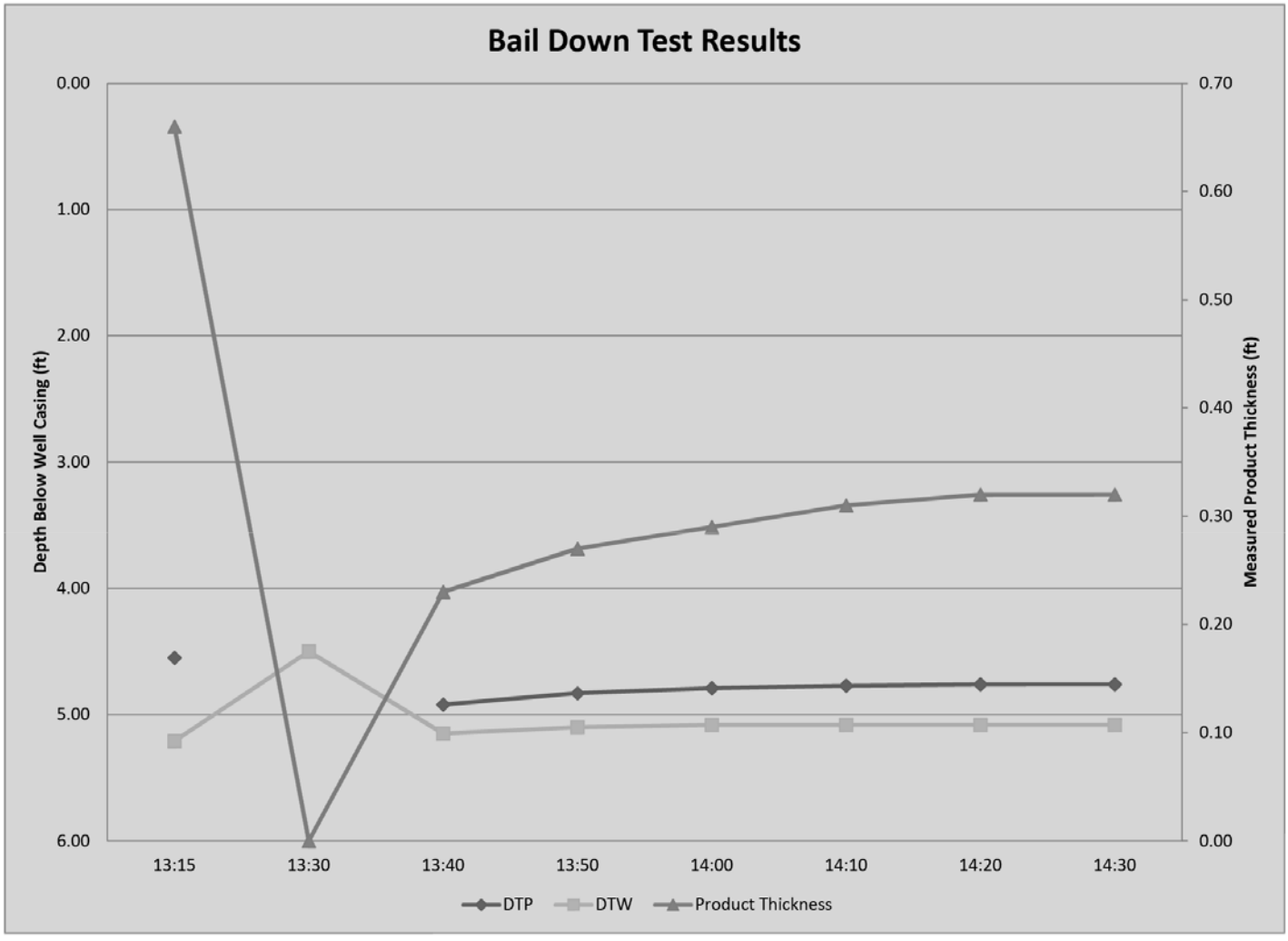
DHEC 1903 (07/2003) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX F

AQUIFER EVALUATION DATA

Bail Down Test Measurements

Time	DTP	DTW	Product Thickness
13:15	4.55	5.21	0.66
13:30		4.50	0.00
13:40	4.92	5.15	0.23
13:50	4.83	5.10	0.27
14:00	4.79	5.08	0.29
14:10	4.77	5.08	0.31
14:20	4.76	5.08	0.32
14:30	4.76	5.08	0.32


Bail Down Test Results
Depth Below Well Casing (ft)
Measured Product Thickness (ft)
0.00
1.00
2.00
3.00
4.00
5.00
6.00
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
13:15
13:30
13:40
13:50
14:00
14:10
14:20
14:30
DTP
DTW
Product Thickness

SUMMARY of SLUG TEST ANALYSES

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #: 02567 COUNTY: Colleton

FACILITY NAME: Rhodesway North

Slug Data

See
Appendix F Table 1 Figure _____ for a list of all data measurements.
(water level logs, etc.) (Complete as appropriate).

Water Level Recovery Data was measured by In-Situ Level Troll 700 (100 PSI)
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method)

Complete the following table for each well tested.
COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED.

Slug Test Conducted in well(s) Number	MW-7	TW-1	TW-2	
Initial Rise/Drawdown in well (feet)	7.495	27.54	32.01	
Radius of Well Casing (feet)	0.083	0.083	0.083	
Effective Radius of Well (feet)	0.33	0.33	0.33	
Static Saturated Aquifer Thickness (feet)	100	100	100	
Length of Well Screen (feet)	10	5	5	
Static Height of Water Column in Well (feet)	8.21	29.28	30.44	

Calculations

See
Appendix F Table 1 Figure _____ for calculations. (Complete as appropriate).
The method for aquifer calculations was Bouwer-Rice (I.e. Bouwer-Rice, Cooper, etc.)
Calculated values by well were as follows:

Slug Test Conducted in well(s) number	MW-7	TW-1	TW-2	
Hydraulic Conductivity (ft/day)	0.1802	0.1632	0.3193	

Thickness of the aquifer used to calculate hydraulic conductivity was 100 feet.
The aquifer is _____ confined _____ semi-confined x water table.

The estimated seepage velocity is 10.29 (MW-7), 9.32 (TW-1), 18.24 (TW-2) feet/year based on
a hydraulic conductivity of 0.1802 (MW-7), 0.1632 (TW-1) & 0.3193 (TW-2) a hydraulic gradient of 0.036 ft/ft and
a porosity of 23 per cent for a sandy soil (list type).

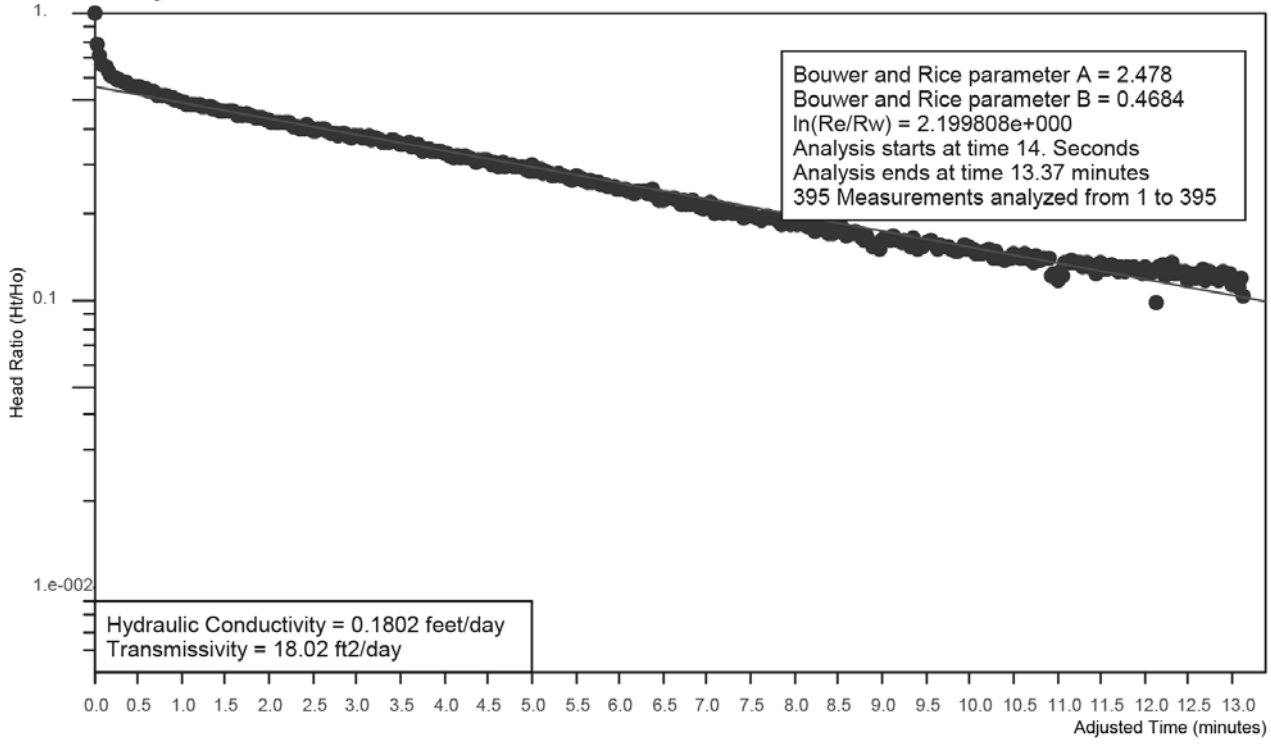
SUMMARY of SLUG TEST

Slug Test 4/19/13

Bouwer and Rice Graph

Rhodesway North Walterboro, SC

MW-7



Project Number: 14-215778 for Rhodes Oil Company

Ho is 0.711 feet at 14. Seconds

Slug Test

Site Name:	Rhodesway North
Location:	Walterboro, SC
Test Date:	4/19/13
Client:	Rhodes Oil Company
Project Number:	14-215778

Well Label:	MW-7
Aquifer Thickness:	100. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	3.25 Inches
Static Water Level:	8.206 feet
Water Table to Screen Bottom:	9.03 feet
Anisotropy Ratio:	1.
Time Adjustment:	14. Seconds

Test starts with trial 0
There are 395 time and drawdown measurements
Maximum head is 0.711 feet
Minimum head is 0. feet

Trial	Time (Seconds)	Adjusted Time (Seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	14.	0.	7.495	0.711	1.
2	16.	2.	7.644	0.562	0.7904
3	18.	4.	7.699	0.507	0.7131
4	20.	6.	7.73	0.476	0.6695
5	22.	8.	7.742	0.464	0.6526
6	24.	10.	7.759	0.447	0.6287
7	26.	12.	7.771	0.435	0.6118
8	28.	14.	7.781	0.425	0.5977
9	30.	16.	7.783	0.423	0.5949
10	32.	18.	7.788	0.418	0.5879
11	34.	20.	7.792	0.414	0.5823
12	36.	22.	7.796	0.41	0.5767
13	38.	24.	7.802	0.404	0.5682
14	40.	26.	7.806	0.4	0.5626
15	42.	28.	7.806	0.4	0.5626
16	44.	30.	7.809	0.397	0.5584
17	46.	32.	7.809	0.397	0.5584
18	48.	34.	7.814	0.392	0.5513
19	50.	36.	7.818	0.388	0.5457
20	52.	38.	7.822	0.384	0.5401
21	54.	40.	7.825	0.381	0.5359
22	56.	42.	7.829	0.377	0.5302
23	58.	44.	7.836	0.37	0.5204
24	60.	46.	7.836	0.37	0.5204
25	62.	48.	7.834	0.372	0.5232
26	64.	50.	7.837	0.369	0.519
27	66.	52.	7.84	0.366	0.5148
28	68.	54.	7.843	0.363	0.5105
29	70.	56.	7.847	0.359	0.5049
30	72.	58.	7.85	0.356	0.5007
31	74.	60.	7.858	0.348	0.4895
32	76.	62.	7.854	0.352	0.4951
33	78.	64.	7.861	0.345	0.4852
34	80.	66.	7.86	0.346	0.4866

35	82.	68.	7.862	0.344	0.4838
36	84.	70.	7.863	0.343	0.4824
37	86.	72.	7.863	0.343	0.4824
38	88.	74.	7.866	0.34	0.4782
39	90.	76.	7.868	0.338	0.4754
40	92.	78.	7.869	0.337	0.474
41	94.	80.	7.87	0.336	0.4726
42	96.	82.	7.872	0.334	0.4698
43	98.	84.	7.873	0.333	0.4684
44	100.	86.	7.878	0.328	0.4613
45	102.	88.	7.88	0.326	0.4585
46	104.	90.	7.881	0.325	0.4571
47	106.	92.	7.88	0.326	0.4585
48	108.	94.	7.881	0.325	0.4571
49	110.	96.	7.88	0.326	0.4585
50	112.	98.	7.89	0.316	0.4444
51	114.	100.	7.888	0.318	0.4473
52	116.	102.	7.889	0.317	0.4459
53	118.	104.	7.885	0.321	0.4515
54	120.	106.	7.891	0.315	0.443
55	122.	108.	7.891	0.315	0.443
56	124.	110.	7.899	0.307	0.4318
57	126.	112.	7.895	0.311	0.4374
58	128.	114.	7.899	0.307	0.4318
59	130.	116.	7.899	0.307	0.4318
60	132.	118.	7.9	0.306	0.4304
61	134.	120.	7.9	0.306	0.4304
62	136.	122.	7.907	0.299	0.4205
63	138.	124.	7.908	0.298	0.4191
64	140.	126.	7.909	0.297	0.4177
65	142.	128.	7.91	0.296	0.4163
66	144.	130.	7.906	0.3	0.4219
67	146.	132.	7.91	0.296	0.4163
68	148.	134.	7.905	0.301	0.4233
69	150.	136.	7.917	0.289	0.4065
70	152.	138.	7.919	0.287	0.4037
71	154.	140.	7.918	0.288	0.4051
72	156.	142.	7.922	0.284	0.3994
73	158.	144.	7.921	0.285	0.4008
74	160.	146.	7.915	0.291	0.4093
75	162.	148.	7.92	0.286	0.4023
76	164.	150.	7.926	0.28	0.3938
77	166.	152.	7.926	0.28	0.3938
78	168.	154.	7.923	0.283	0.398
79	170.	156.	7.923	0.283	0.398
80	172.	158.	7.923	0.283	0.398
81	174.	160.	7.93	0.276	0.3882
82	176.	162.	7.932	0.274	0.3854
83	178.	164.	7.934	0.272	0.3826
84	180.	166.	7.932	0.274	0.3854
85	182.	168.	7.936	0.27	0.3797
86	184.	170.	7.933	0.273	0.384
87	186.	172.	7.934	0.272	0.3826
88	188.	174.	7.94	0.266	0.3741
89	190.	176.	7.943	0.263	0.3699
90	192.	178.	7.936	0.27	0.3797
91	194.	180.	7.936	0.27	0.3797

92	196.	182.	7.936	0.27	0.3797
93	198.	184.	7.942	0.264	0.3713
94	200.	186.	7.942	0.264	0.3713
95	202.	188.	7.939	0.267	0.3755
96	204.	190.	7.949	0.257	0.3615
97	206.	192.	7.944	0.262	0.3685
98	208.	194.	7.942	0.264	0.3713
99	210.	196.	7.948	0.258	0.3629
100	212.	198.	7.954	0.252	0.3544
101	214.	200.	7.954	0.252	0.3544
102	216.	202.	7.95	0.256	0.3601
103	218.	204.	7.949	0.257	0.3615
104	220.	206.	7.949	0.257	0.3615
105	222.	208.	7.953	0.253	0.3558
106	224.	210.	7.956	0.25	0.3516
107	226.	212.	7.958	0.248	0.3488
108	228.	214.	7.957	0.249	0.3502
109	230.	216.	7.953	0.253	0.3558
110	232.	218.	7.961	0.245	0.3446
111	234.	220.	7.959	0.247	0.3474
112	236.	222.	7.958	0.248	0.3488
113	238.	224.	7.964	0.242	0.3404
114	240.	226.	7.969	0.237	0.3333
115	242.	228.	7.967	0.239	0.3361
116	244.	230.	7.966	0.24	0.3376
117	246.	232.	7.969	0.237	0.3333
118	248.	234.	7.97	0.236	0.3319
119	250.	236.	7.969	0.237	0.3333
120	252.	238.	7.969	0.237	0.3333
121	254.	240.	7.972	0.234	0.3291
122	256.	242.	7.975	0.231	0.3249
123	258.	244.	7.976	0.23	0.3235
124	260.	246.	7.98	0.226	0.3179
125	262.	248.	7.976	0.23	0.3235
126	264.	250.	7.978	0.228	0.3207
127	266.	252.	7.982	0.224	0.315
128	268.	254.	7.979	0.227	0.3193
129	270.	256.	7.982	0.224	0.315
130	272.	258.	7.981	0.225	0.3165
131	274.	260.	7.986	0.22	0.3094
132	276.	262.	7.99	0.216	0.3038
133	278.	264.	7.987	0.219	0.308
134	280.	266.	7.986	0.22	0.3094
135	282.	268.	7.986	0.22	0.3094
136	284.	270.	7.987	0.219	0.308
137	286.	272.	7.993	0.213	0.2996
138	288.	274.	7.989	0.217	0.3052
139	290.	276.	7.994	0.212	0.2982
140	292.	278.	7.997	0.209	0.294
141	294.	280.	7.991	0.215	0.3024
142	296.	282.	7.996	0.21	0.2954
143	298.	284.	7.992	0.214	0.301
144	300.	286.	7.993	0.213	0.2996
145	302.	288.	7.996	0.21	0.2954
146	304.	290.	7.999	0.207	0.2911
147	306.	292.	7.999	0.207	0.2911
148	308.	294.	7.999	0.207	0.2911

149	310.	296.	8.	0.206	0.2897
150	312.	298.	8.005	0.201	0.2827
151	314.	300.	7.995	0.211	0.2968
152	316.	302.	8.004	0.202	0.2841
153	318.	304.	8.003	0.203	0.2855
154	320.	306.	8.002	0.204	0.2869
155	322.	308.	8.008	0.198	0.2785
156	324.	310.	8.004	0.202	0.2841
157	326.	312.	8.008	0.198	0.2785
158	328.	314.	8.011	0.195	0.2743
159	330.	316.	8.012	0.194	0.2729
160	332.	318.	8.009	0.197	0.2771
161	334.	320.	8.013	0.193	0.2714
162	336.	322.	8.012	0.194	0.2729
163	338.	324.	8.016	0.19	0.2672
164	340.	326.	8.014	0.192	0.27
165	342.	328.	8.019	0.187	0.263
166	344.	330.	8.012	0.194	0.2729
167	346.	332.	8.016	0.19	0.2672
168	348.	334.	8.016	0.19	0.2672
169	350.	336.	8.019	0.187	0.263
170	352.	338.	8.023	0.183	0.2574
171	354.	340.	8.017	0.189	0.2658
172	356.	342.	8.023	0.183	0.2574
173	358.	344.	8.021	0.185	0.2602
174	360.	346.	8.023	0.183	0.2574
175	362.	348.	8.025	0.181	0.2546
176	364.	350.	8.025	0.181	0.2546
177	366.	352.	8.029	0.177	0.2489
178	368.	354.	8.029	0.177	0.2489
179	370.	356.	8.027	0.179	0.2518
180	372.	358.	8.03	0.176	0.2475
181	374.	360.	8.03	0.176	0.2475
182	376.	362.	8.031	0.175	0.2461
183	378.	364.	8.03	0.176	0.2475
184	380.	366.	8.036	0.17	0.2391
185	382.	368.	8.034	0.172	0.2419
186	384.	370.	8.038	0.168	0.2363
187	386.	372.	8.034	0.172	0.2419
188	388.	374.	8.036	0.17	0.2391
189	390.	376.	8.035	0.171	0.2405
190	392.	378.	8.036	0.17	0.2391
191	394.	380.	8.039	0.167	0.2349
192	396.	382.	8.032	0.174	0.2447
193	398.	384.	8.042	0.164	0.2307
194	400.	386.	8.04	0.166	0.2335
195	402.	388.	8.046	0.16	0.225
196	404.	390.	8.046	0.16	0.225
197	406.	392.	8.044	0.162	0.2278
198	408.	394.	8.045	0.161	0.2264
199	410.	396.	8.045	0.161	0.2264
200	412.	398.	8.043	0.163	0.2293
201	414.	400.	8.046	0.16	0.225
202	416.	402.	8.052	0.154	0.2166
203	418.	404.	8.046	0.16	0.225
204	420.	406.	8.052	0.154	0.2166
205	422.	408.	8.052	0.154	0.2166

206	424.	410.	8.047	0.159	0.2236
207	426.	412.	8.053	0.153	0.2152
208	428.	414.	8.054	0.152	0.2138
209	430.	416.	8.054	0.152	0.2138
210	432.	418.	8.057	0.149	0.2096
211	434.	420.	8.051	0.155	0.218
212	436.	422.	8.05	0.156	0.2194
213	438.	424.	8.051	0.155	0.218
214	440.	426.	8.062	0.144	0.2025
215	442.	428.	8.056	0.15	0.211
216	444.	430.	8.061	0.145	0.2039
217	446.	432.	8.062	0.144	0.2025
218	448.	434.	8.058	0.148	0.2082
219	450.	436.	8.059	0.147	0.2068
220	452.	438.	8.062	0.144	0.2025
221	454.	440.	8.063	0.143	0.2011
222	456.	442.	8.064	0.142	0.1997
223	458.	444.	8.064	0.142	0.1997
224	460.	446.	8.067	0.139	0.1955
225	462.	448.	8.065	0.141	0.1983
226	464.	450.	8.064	0.142	0.1997
227	466.	452.	8.066	0.14	0.1969
228	468.	454.	8.068	0.138	0.1941
229	470.	456.	8.068	0.138	0.1941
230	472.	458.	8.071	0.135	0.1899
231	474.	460.	8.066	0.14	0.1969
232	476.	462.	8.066	0.14	0.1969
233	478.	464.	8.068	0.138	0.1941
234	480.	466.	8.067	0.139	0.1955
235	482.	468.	8.071	0.135	0.1899
236	484.	470.	8.071	0.135	0.1899
237	486.	472.	8.074	0.132	0.1857
238	488.	474.	8.066	0.14	0.1969
239	490.	476.	8.072	0.134	0.1885
240	492.	478.	8.074	0.132	0.1857
241	494.	480.	8.073	0.133	0.1871
242	496.	482.	8.076	0.13	0.1828
243	498.	484.	8.069	0.137	0.1927
244	500.	486.	8.075	0.131	0.1842
245	502.	488.	8.073	0.133	0.1871
246	504.	490.	8.077	0.129	0.1814
247	506.	492.	8.079	0.127	0.1786
248	508.	494.	8.081	0.125	0.1758
249	510.	496.	8.078	0.128	0.18
250	512.	498.	8.079	0.127	0.1786
251	514.	500.	8.076	0.13	0.1828
252	516.	502.	8.08	0.126	0.1772
253	518.	504.	8.083	0.123	0.173
254	520.	506.	8.083	0.123	0.173
255	522.	508.	8.076	0.13	0.1828
256	524.	510.	8.081	0.125	0.1758
257	526.	512.	8.078	0.128	0.18
258	528.	514.	8.084	0.122	0.1716
259	530.	516.	8.086	0.12	0.1688
260	532.	518.	8.084	0.122	0.1716
261	534.	520.	8.084	0.122	0.1716
262	536.	522.	8.082	0.124	0.1744

263	538.	524.	8.085	0.121	0.1702
264	540.	526.	8.089	0.117	0.1646
265	542.	528.	8.091	0.115	0.1617
266	544.	530.	8.086	0.12	0.1688
267	546.	532.	8.092	0.114	0.1603
268	548.1	534.1	8.096	0.11	0.1547
269	550.	536.	8.096	0.11	0.1547
270	552.	538.	8.099	0.107	0.1505
271	554.	540.	8.09	0.116	0.1632
272	556.	542.	8.088	0.118	0.166
273	558.	544.	8.09	0.116	0.1632
274	560.	546.	8.091	0.115	0.1617
275	562.	548.	8.087	0.119	0.1674
276	564.	550.	8.091	0.115	0.1617
277	566.	552.	8.09	0.116	0.1632
278	568.	554.	8.092	0.114	0.1603
279	570.	556.	8.09	0.116	0.1632
280	572.	558.	8.092	0.114	0.1603
281	574.	560.	8.097	0.109	0.1533
282	576.	562.	8.089	0.117	0.1646
283	578.	564.	8.099	0.107	0.1505
284	580.	566.	8.096	0.11	0.1547
285	582.	568.	8.096	0.11	0.1547
286	584.	570.	8.093	0.113	0.1589
287	586.	572.	8.093	0.113	0.1589
288	588.	574.	8.091	0.115	0.1617
289	590.	576.	8.095	0.111	0.1561
290	592.	578.	8.098	0.108	0.1519
291	594.	580.	8.094	0.112	0.1575
292	596.	582.	8.096	0.11	0.1547
293	598.	584.	8.096	0.11	0.1547
294	600.	586.	8.096	0.11	0.1547
295	602.	588.	8.099	0.107	0.1505
296	604.	590.	8.1	0.106	0.1491
297	606.	592.	8.1	0.106	0.1491
298	608.	594.	8.099	0.107	0.1505
299	610.	596.	8.094	0.112	0.1575
300	612.	598.	8.098	0.108	0.1519
301	614.	600.	8.096	0.11	0.1547
302	616.	602.	8.099	0.107	0.1505
303	618.	604.	8.102	0.104	0.1463
304	620.	606.	8.102	0.104	0.1463
305	622.	608.	8.102	0.104	0.1463
306	624.	610.	8.1	0.106	0.1491
307	626.	612.	8.101	0.105	0.1477
308	628.	614.	8.099	0.107	0.1505
309	630.	616.	8.105	0.101	0.1421
310	632.	618.	8.101	0.105	0.1477
311	634.	620.	8.106	1.e-001	0.1406
312	636.	622.	8.105	0.101	0.1421
313	638.	624.	8.108	9.8e-002	0.1378
314	640.	626.	8.106	1.e-001	0.1406
315	642.	628.	8.106	1.e-001	0.1406
316	644.	630.	8.102	0.104	0.1463
317	646.	632.	8.104	0.102	0.1435
318	648.	634.	8.106	1.e-001	0.1406
319	650.	636.	8.106	1.e-001	0.1406

320	652.	638.	8.103	0.103	0.1449
321	654.	640.	8.106	1.e-001	0.1406
322	656.	642.	8.107	9.9e-002	0.1392
323	658.	644.	8.109	9.7e-002	0.1364
324	660.	646.	8.104	0.102	0.1435
325	662.	648.	8.108	9.8e-002	0.1378
326	664.	650.	8.106	1.e-001	0.1406
327	666.	652.	8.106	1.e-001	0.1406
328	668.	654.	8.106	1.e-001	0.1406
329	670.	656.	8.119	8.7e-002	0.1224
330	672.	658.	8.117	8.9e-002	0.1252
331	674.	660.	8.122	8.4e-002	0.1181
332	676.	662.	8.116	9.e-002	0.1266
333	678.	664.	8.119	8.7e-002	0.1224
334	680.	666.	8.109	9.7e-002	0.1364
335	682.	668.	8.109	9.7e-002	0.1364
336	684.	670.	8.107	9.9e-002	0.1392
337	686.	672.	8.11	9.6e-002	0.135
338	688.	674.	8.11	9.6e-002	0.135
339	690.	676.	8.11	9.6e-002	0.135
340	692.	678.	8.112	9.4e-002	0.1322
341	694.	680.	8.11	9.6e-002	0.135
342	696.	682.	8.113	9.3e-002	0.1308
343	698.	684.	8.113	9.3e-002	0.1308
344	700.	686.	8.118	8.8e-002	0.1238
345	702.	688.	8.115	9.1e-002	0.128
346	704.	690.	8.11	9.6e-002	0.135
347	706.	692.	8.114	9.2e-002	0.1294
348	708.	694.	8.114	9.2e-002	0.1294
349	710.	696.	8.112	9.4e-002	0.1322
350	712.	698.	8.111	9.5e-002	0.1336
351	714.	700.	8.115	9.1e-002	0.128
352	716.	702.	8.116	9.e-002	0.1266
353	718.	704.	8.113	9.3e-002	0.1308
354	720.	706.	8.116	9.e-002	0.1266
355	722.	708.	8.112	9.4e-002	0.1322
356	724.	710.	8.115	9.1e-002	0.128
357	726.	712.	8.113	9.3e-002	0.1308
358	728.	714.	8.115	9.1e-002	0.128
359	730.	716.	8.116	9.e-002	0.1266
360	732.	718.	8.117	8.9e-002	0.1252
361	734.	720.	8.113	9.3e-002	0.1308
362	736.	722.	8.116	9.e-002	0.1266
363	738.	724.	8.117	8.9e-002	0.1252
364	740.	726.	8.116	9.e-002	0.1266
365	742.	728.	8.136	7.e-002	9.845e-002
366	744.	730.	8.112	9.4e-002	0.1322
367	746.	732.	8.111	9.5e-002	0.1336
368	748.	734.	8.119	8.7e-002	0.1224
369	750.	736.	8.115	9.1e-002	0.128
370	752.	738.	8.109	9.7e-002	0.1364
371	754.	740.	8.118	8.8e-002	0.1238
372	756.	742.	8.117	8.9e-002	0.1252
373	758.	744.	8.116	9.e-002	0.1266
374	760.	746.	8.118	8.8e-002	0.1238
375	762.	748.	8.116	9.e-002	0.1266
376	764.	750.	8.123	8.3e-002	0.1167

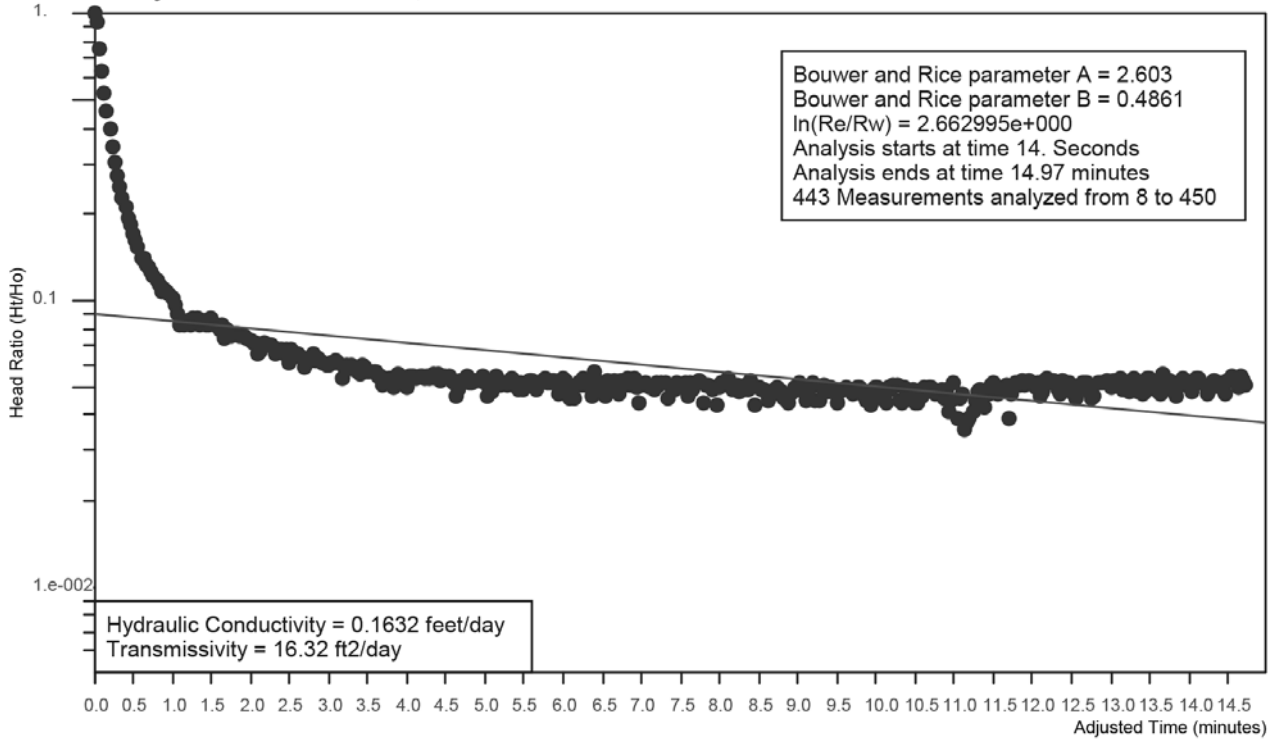
377	766.	752.	8.118	8.8e-002	0.1238
378	768.	754.	8.121	8.5e-002	0.1195
379	770.	756.	8.121	8.5e-002	0.1195
380	772.	758.	8.116	9.e-002	0.1266
381	774.	760.	8.115	9.1e-002	0.128
382	776.	762.	8.122	8.4e-002	0.1181
383	778.	764.	8.116	9.e-002	0.1266
384	780.	766.	8.118	8.8e-002	0.1238
385	782.	768.	8.12	8.6e-002	0.121
386	784.	770.	8.122	8.4e-002	0.1181
387	786.	772.	8.119	8.7e-002	0.1224
388	788.	774.	8.116	9.e-002	0.1266
389	790.	776.	8.118	8.8e-002	0.1238
390	792.	778.	8.118	8.8e-002	0.1238
391	794.	780.	8.125	8.1e-002	0.1139
392	796.	782.	8.123	8.3e-002	0.1167
393	798.	784.	8.126	8.e-002	0.1125
394	800.	786.	8.12	8.6e-002	0.121
395	802.	788.	8.132	7.4e-002	0.1041

Slug Test 4/19/13

Bouwer and Rice Graph

Rhodesway North Walterboro, SC

TW-1



Project Number: 14-215778 for Rhodes Oil Company

Ho is 1.739 feet at 14. Seconds

Slug Test

Site Name:	Rhodesway North
Location:	Walterboro, SC
Test Date:	4/19/13
Client:	Rhodes Oil Company
Project Number:	14-215778

Well Label:	TW-1
Aquifer Thickness:	100. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	3.25 Inches
Static Water Level:	29.28 feet
Water Table to Screen Bottom:	30.98 feet
Anisotropy Ratio:	1.
Time Adjustment:	14. Seconds

Test starts with trial 7
There are 450 time and drawdown measurements
Maximum head is 1.739 feet
Minimum head is 0. feet

Trial	Time (Seconds)	Adjusted Time (Seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-14.	29.28	0.	0.
2	2.001	-12.	29.26	1.732e-002	9.96e-003
3	4.001	-10.	29.26	1.962e-002	1.128e-002
4	6.001	-8.	29.26	1.867e-002	1.074e-002
5	8.001	-6.	29.26	1.609e-002	9.252e-003
6	10.	-4.	29.26	1.913e-002	1.1e-002
7	12.	-2.	29.26	1.671e-002	9.61e-003
8	14.	0.	27.54	1.739	1.
9	16.	2.	27.64	1.639	0.9426
10	18.	4.	27.95	1.325	0.7617
11	20.	6.	28.18	1.101	0.6331
12	22.	8.	28.35	0.9286	0.5341
13	24.	10.	28.48	0.7925	0.4558
14	26.	12.	28.59	0.6902	0.3969
15	28.	14.	28.67	0.6018	0.3461
16	30.	16.	28.74	0.5326	0.3063
17	32.	18.	28.8	0.4768	0.2742
18	34.	20.	28.84	0.4332	0.2491
19	36.	22.	28.88	0.3963	0.2279
20	38.	24.	28.91	0.3669	0.211
21	40.	26.	28.93	0.3409	0.1961
22	42.	28.	28.96	0.3177	0.1827
23	44.	30.	28.98	0.2993	0.1721
24	46.	32.	29.	0.2805	0.1613
25	48.	34.	29.01	0.2694	0.1549
26	50.	36.	29.03	0.2456	0.1413
27	52.	38.	29.03	0.2435	0.14
28	54.	40.	29.04	0.2315	0.1331
29	56.	42.	29.05	0.2262	0.1301
30	58.	44.	29.06	0.2207	0.1269
31	60.	46.	29.06	0.2128	0.1224
32	62.	48.	29.07	0.2051	0.1179
33	64.	50.	29.08	0.1976	0.1137
34	66.	52.	29.09	0.1881	0.1082

35	68.	54.	29.09	0.1897	0.1091
36	70.	56.	29.09	0.1885	0.1084
37	72.	58.	29.09	0.1834	0.1054
38	74.	60.	29.1	0.1773	0.102
39	76.	62.	29.11	0.1684	9.684e-002
40	78.	64.	29.12	0.1575	9.055e-002
41	80.	66.	29.13	0.143	8.225e-002
42	82.	68.	29.13	0.1457	8.381e-002
43	84.	70.	29.13	0.1424	8.189e-002
44	86.	72.	29.13	0.1484	8.537e-002
45	88.	74.	29.13	0.1444	8.303e-002
46	90.	76.	29.12	0.1512	8.695e-002
47	92.	78.	29.13	0.1495	8.6e-002
48	94.	80.	29.13	0.15	8.625e-002
49	96.	82.	29.13	0.1442	8.293e-002
50	98.	84.	29.13	0.1474	8.477e-002
51	100.	86.	29.13	0.1431	8.232e-002
52	102.	88.	29.13	0.1431	8.232e-002
53	104.	90.	29.13	0.15	8.625e-002
54	106.	92.	29.13	0.1451	8.346e-002
55	108.	94.	29.13	0.1433	8.24e-002
56	110.	96.	29.14	0.1384	7.961e-002
57	112.	98.	29.13	0.1436	8.258e-002
58	114.	100.	29.15	0.1287	7.404e-002
59	116.	102.	29.14	0.1375	7.907e-002
60	118.	104.	29.15	0.1306	7.51e-002
61	120.	106.	29.15	0.1305	7.506e-002
62	122.	108.	29.14	0.1333	7.665e-002
63	124.	110.	29.14	0.1343	7.726e-002
64	126.	112.	29.14	0.1321	7.595e-002
65	128.	114.	29.14	0.1313	7.551e-002
66	130.	116.	29.15	0.1305	7.506e-002
67	132.	118.	29.15	0.1283	7.378e-002
68	134.	120.	29.15	0.1257	7.229e-002
69	136.	122.	29.15	0.1243	7.15e-002
70	138.	124.	29.15	0.1251	7.194e-002
71	140.	126.	29.16	0.1134	6.522e-002
72	142.	128.	29.16	0.1146	6.593e-002
73	144.	130.	29.15	0.1239	7.123e-002
74	146.	132.	29.15	0.121	6.957e-002
75	148.	134.	29.15	0.1222	7.028e-002
76	150.	136.	29.15	0.1228	7.061e-002
77	152.	138.	29.16	0.1205	6.931e-002
78	154.	140.	29.16	0.1134	6.522e-002
79	156.	142.	29.16	0.1175	6.757e-002
80	158.	144.	29.16	0.117	6.73e-002
81	160.	146.	29.16	0.1134	6.522e-002
82	162.	148.	29.16	0.1172	6.739e-002
83	164.	150.	29.17	0.1064	6.12e-002
84	166.	152.	29.16	0.1166	6.705e-002
85	168.	154.	29.16	0.1128	6.486e-002
86	170.	156.	29.16	0.114	6.556e-002
87	172.	158.	29.16	0.1111	6.39e-002
88	174.	160.	29.17	0.1097	6.311e-002
89	176.	162.	29.17	0.1016	5.842e-002
90	178.	164.	29.17	0.1084	6.234e-002
91	180.	166.	29.17	0.1073	6.173e-002

92	182.	168.	29.16	0.1137	6.538e-002
93	184.	170.	29.17	0.107	6.156e-002
94	186.	172.	29.17	0.1091	6.277e-002
95	188.	174.	29.17	0.1084	6.234e-002
96	190.	176.	29.17	0.1064	6.12e-002
97	192.	178.	29.17	0.1038	5.971e-002
98	194.	180.	29.17	0.1034	5.945e-002
99	196.	182.	29.17	0.1049	6.032e-002
100	198.	184.	29.17	0.1052	6.05e-002
101	200.	186.	29.17	0.1076	6.19e-002
102	202.	188.	29.17	0.1047	6.023e-002
103	204.	190.	29.18	9.336e-002	5.37e-002
104	206.	192.	29.17	0.1021	5.874e-002
105	208.	194.	29.17	0.1032	5.937e-002
106	210.	196.	29.17	0.1018	5.857e-002
107	212.	198.	29.17	0.1046	6.016e-002
108	214.	200.	29.18	9.928e-002	5.709e-002
109	216.	202.	29.18	9.866e-002	5.674e-002
110	218.	204.	29.18	9.612e-002	5.528e-002
111	220.	206.	29.17	0.1041	5.989e-002
112	222.	208.	29.17	0.1012	5.822e-002
113	224.	210.	29.18	9.883e-002	5.684e-002
114	226.	212.	29.18	9.837e-002	5.657e-002
115	228.	214.	29.18	9.837e-002	5.657e-002
116	230.	216.	29.18	9.853e-002	5.666e-002
117	232.	218.	29.18	9.518e-002	5.474e-002
118	234.	220.	29.18	9.548e-002	5.491e-002
119	236.	222.	29.19	8.836e-002	5.082e-002
120	238.	224.	29.19	9.033e-002	5.195e-002
121	240.	226.	29.18	9.274e-002	5.334e-002
122	242.	228.	29.18	9.322e-002	5.361e-002
123	244.	230.	29.19	8.669e-002	4.986e-002
124	246.	232.	29.18	9.379e-002	5.394e-002
125	248.	234.	29.18	9.732e-002	5.597e-002
126	250.	236.	29.18	9.443e-002	5.431e-002
127	252.	238.	29.19	8.867e-002	5.1e-002
128	254.	240.	29.19	8.611e-002	4.952e-002
129	256.	242.	29.18	9.564e-002	5.5e-002
130	258.	244.	29.18	9.488e-002	5.457e-002
131	260.	246.	29.18	9.488e-002	5.457e-002
132	262.	248.	29.18	9.259e-002	5.325e-002
133	264.	250.	29.18	9.534e-002	5.483e-002
134	266.	252.	29.18	9.534e-002	5.483e-002
135	268.	254.	29.18	9.248e-002	5.319e-002
136	270.	256.	29.18	9.459e-002	5.44e-002
137	272.	258.	29.18	9.396e-002	5.404e-002
138	274.	260.	29.18	9.607e-002	5.525e-002
139	276.	262.	29.18	9.334e-002	5.368e-002
140	278.	264.	29.18	9.639e-002	5.544e-002
141	280.	266.	29.18	9.213e-002	5.299e-002
142	282.	268.	29.18	9.289e-002	5.342e-002
143	284.	270.	29.18	9.47e-002	5.446e-002
144	286.	272.	29.18	9.488e-002	5.457e-002
145	288.	274.	29.18	9.2e-002	5.291e-002
146	290.	276.	29.19	8.912e-002	5.126e-002
147	292.	278.	29.2	8.032e-002	4.619e-002
148	294.	280.	29.19	8.474e-002	4.874e-002

149	296.	282.	29.18	9.213e-002	5.299e-002
150	298.	284.	29.19	9.075e-002	5.219e-002
151	300.	286.	29.18	9.534e-002	5.483e-002
152	302.	288.	29.19	8.938e-002	5.14e-002
153	304.	290.	29.19	9.061e-002	5.211e-002
154	306.	292.	29.18	9.11e-002	5.239e-002
155	308.	294.	29.18	9.136e-002	5.254e-002
156	310.	296.	29.18	9.2e-002	5.291e-002
157	312.	298.	29.18	9.41e-002	5.412e-002
158	314.	300.	29.19	9.033e-002	5.195e-002
159	316.	302.	29.2	8.076e-002	4.645e-002
160	318.	304.	29.19	8.488e-002	4.882e-002
161	320.	306.	29.19	8.306e-002	4.777e-002
162	322.	308.	29.18	9.518e-002	5.474e-002
163	324.	310.	29.18	9.154e-002	5.265e-002
164	326.	312.	29.19	8.864e-002	5.098e-002
165	328.	314.	29.19	9.016e-002	5.185e-002
166	330.	316.	29.19	9.e-002	5.176e-002
167	332.	318.	29.19	8.836e-002	5.082e-002
168	334.	320.	29.18	9.259e-002	5.325e-002
169	336.	322.	29.19	8.896e-002	5.116e-002
170	338.	324.	29.19	9.016e-002	5.185e-002
171	340.	326.	29.19	8.535e-002	4.909e-002
172	342.	328.	29.19	9.033e-002	5.195e-002
173	344.	330.	29.19	8.457e-002	4.864e-002
174	346.	332.	29.19	8.879e-002	5.106e-002
175	348.	334.	29.18	9.093e-002	5.229e-002
176	350.	336.	29.18	9.122e-002	5.246e-002
177	352.	338.	29.19	9.016e-002	5.185e-002
178	354.	340.	29.19	8.517e-002	4.898e-002
179	356.	342.	29.19	9.061e-002	5.211e-002
180	358.	344.	29.18	9.186e-002	5.283e-002
181	360.	346.	29.18	9.245e-002	5.317e-002
182	362.	348.	29.19	9.047e-002	5.203e-002
183	364.	350.	29.19	9.047e-002	5.203e-002
184	366.	352.	29.18	9.2e-002	5.291e-002
185	368.	354.	29.18	9.136e-002	5.254e-002
186	370.	356.	29.19	8.168e-002	4.697e-002
187	372.	358.	29.19	8.974e-002	5.161e-002
188	374.	360.	29.18	9.334e-002	5.368e-002
189	376.	362.	29.18	9.11e-002	5.239e-002
190	378.	364.	29.19	8.322e-002	4.786e-002
191	380.	366.	29.2	7.88e-002	4.532e-002
192	382.	368.	29.2	7.986e-002	4.593e-002
193	384.	370.	29.19	8.802e-002	5.062e-002
194	386.	372.	29.19	8.957e-002	5.151e-002
195	388.	374.	29.19	8.879e-002	5.106e-002
196	390.	376.	29.18	9.379e-002	5.394e-002
197	392.	378.	29.19	8.85e-002	5.09e-002
198	394.	380.	29.19	9.e-002	5.176e-002
199	396.	382.	29.2	8.016e-002	4.61e-002
200	398.	384.	29.18	9.759e-002	5.613e-002
201	400.	386.	29.18	9.186e-002	5.283e-002
202	402.	388.	29.19	9.061e-002	5.211e-002
203	404.	390.	29.19	8.29e-002	4.768e-002
204	406.	392.	29.2	8.048e-002	4.629e-002
205	408.	394.	29.18	9.213e-002	5.299e-002

206	410.	396.	29.19	8.896e-002	5.116e-002
207	412.	398.	29.19	8.836e-002	5.082e-002
208	414.	400.	29.19	9.075e-002	5.219e-002
209	416.	402.	29.19	8.214e-002	4.724e-002
210	418.	404.	29.18	9.186e-002	5.283e-002
211	420.	406.	29.18	9.11e-002	5.239e-002
212	422.	408.	29.19	8.776e-002	5.047e-002
213	424.	410.	29.18	9.245e-002	5.317e-002
214	426.	412.	29.19	8.836e-002	5.082e-002
215	428.	414.	29.18	9.289e-002	5.342e-002
216	430.	416.	29.19	8.623e-002	4.959e-002
217	432.	418.	29.2	7.698e-002	4.427e-002
218	434.	420.	29.19	8.789e-002	5.055e-002
219	436.	422.	29.19	8.864e-002	5.098e-002
220	438.	424.	29.19	9.e-002	5.176e-002
221	440.	426.	29.19	8.609e-002	4.951e-002
222	442.	428.	29.19	8.652e-002	4.976e-002
223	444.	430.	29.19	8.578e-002	4.933e-002
224	446.	432.	29.19	9.e-002	5.176e-002
225	448.	434.	29.19	8.776e-002	5.047e-002
226	450.	436.	29.19	9.016e-002	5.185e-002
227	452.	438.	29.19	9.016e-002	5.185e-002
228	454.	440.	29.2	7.973e-002	4.585e-002
229	456.	442.	29.19	8.836e-002	5.082e-002
230	458.	444.	29.19	8.517e-002	4.898e-002
231	460.	446.	29.19	8.578e-002	4.933e-002
232	462.	448.	29.19	8.974e-002	5.161e-002
233	464.	450.	29.19	8.697e-002	5.002e-002
234	466.	452.	29.19	8.836e-002	5.082e-002
235	468.	454.	29.19	9.016e-002	5.185e-002
236	470.	456.	29.2	8.048e-002	4.629e-002
237	472.	458.	29.19	9.033e-002	5.195e-002
238	474.	460.	29.19	8.561e-002	4.924e-002
239	476.	462.	29.19	8.957e-002	5.151e-002
240	478.	464.	29.19	9.075e-002	5.219e-002
241	480.	466.	29.19	8.912e-002	5.126e-002
242	482.	468.	29.2	7.713e-002	4.436e-002
243	484.	470.	29.19	8.879e-002	5.106e-002
244	486.	472.	29.19	8.836e-002	5.082e-002
245	488.	474.	29.19	8.471e-002	4.872e-002
246	490.	476.	29.19	8.697e-002	5.002e-002
247	492.	478.	29.2	7.528e-002	4.33e-002
248	494.	480.	29.19	8.638e-002	4.968e-002
249	496.	482.	29.19	8.957e-002	5.151e-002
250	498.	484.	29.19	8.925e-002	5.133e-002
251	500.	486.	29.18	9.365e-002	5.386e-002
252	502.	488.	29.19	8.802e-002	5.062e-002
253	504.	490.	29.19	8.548e-002	4.916e-002
254	506.	492.	29.19	8.759e-002	5.037e-002
255	508.	494.	29.19	8.864e-002	5.098e-002
256	510.	496.	29.19	8.423e-002	4.844e-002
257	512.	498.	29.19	8.485e-002	4.88e-002
258	514.	500.	29.19	8.789e-002	5.055e-002
259	516.	502.	29.19	8.578e-002	4.933e-002
260	518.	504.	29.18	9.2e-002	5.291e-002
261	520.	506.	29.19	8.713e-002	5.011e-002
262	522.	508.	29.2	7.531e-002	4.331e-002

263	524.	510.	29.19	8.668e-002	4.985e-002
264	526.	512.	29.19	8.5e-002	4.888e-002
265	528.	514.	29.19	8.548e-002	4.916e-002
266	530.	516.	29.19	8.333e-002	4.792e-002
267	532.	518.	29.2	7.819e-002	4.497e-002
268	534.	520.	29.19	8.242e-002	4.74e-002
269	536.	522.	29.19	8.531e-002	4.906e-002
270	538.	524.	29.19	8.652e-002	4.976e-002
271	540.	526.	29.19	8.409e-002	4.836e-002
272	542.	528.	29.19	8.38e-002	4.819e-002
273	544.	530.	29.2	7.897e-002	4.541e-002
274	546.	532.	29.2	7.668e-002	4.41e-002
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276	550.	536.	29.19	8.38e-002	4.819e-002
277	552.	538.	29.19	8.621e-002	4.958e-002
278	554.	540.	29.19	8.713e-002	5.011e-002
279	556.	542.	29.19	8.957e-002	5.151e-002
280	558.	544.	29.19	8.364e-002	4.81e-002
281	560.	546.	29.2	7.789e-002	4.479e-002
282	562.	548.	29.19	8.697e-002	5.002e-002
283	564.	550.	29.19	8.726e-002	5.019e-002
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287	572.	558.	29.19	8.638e-002	4.968e-002
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289	576.	562.	29.19	8.638e-002	4.968e-002
290	578.	564.	29.19	8.348e-002	4.801e-002
291	580.	566.	29.19	8.685e-002	4.995e-002
292	582.	568.	29.19	8.333e-002	4.792e-002
293	584.	570.	29.2	7.608e-002	4.375e-002
294	586.	572.	29.19	8.439e-002	4.854e-002
295	588.	574.	29.19	8.454e-002	4.862e-002
296	590.	576.	29.19	8.485e-002	4.88e-002
297	592.	578.	29.19	8.652e-002	4.976e-002
298	594.	580.	29.19	8.578e-002	4.933e-002
299	596.	582.	29.19	8.26e-002	4.75e-002
300	598.	584.	29.19	8.439e-002	4.854e-002
301	600.	586.	29.19	8.609e-002	4.951e-002
302	602.	588.	29.19	8.638e-002	4.968e-002
303	604.	590.	29.19	8.26e-002	4.75e-002
304	606.	592.	29.2	7.744e-002	4.453e-002
305	608.	594.	29.19	8.38e-002	4.819e-002
306	610.	596.	29.2	7.486e-002	4.305e-002
307	612.	598.	29.19	8.121e-002	4.671e-002
308	614.	600.	29.19	8.638e-002	4.968e-002
309	616.	602.	29.19	8.609e-002	4.951e-002
310	618.	604.	29.2	7.926e-002	4.558e-002
311	620.	606.	29.2	7.867e-002	4.525e-002
312	622.	608.	29.2	7.621e-002	4.383e-002
313	624.	610.	29.19	8.726e-002	5.019e-002
314	626.	612.	29.19	8.578e-002	4.933e-002
315	628.	614.	29.19	8.776e-002	5.047e-002
316	630.	616.	29.19	8.776e-002	5.047e-002
317	632.	618.	29.2	7.836e-002	4.507e-002
318	634.	620.	29.2	7.668e-002	4.41e-002
319	636.	622.	29.19	8.652e-002	4.976e-002

320	638.	624.	29.19	8.348e-002	4.801e-002
321	640.	626.	29.19	8.319e-002	4.784e-002
322	642.	628.	29.19	8.578e-002	4.933e-002
323	644.	630.	29.2	7.638e-002	4.393e-002
324	646.	632.	29.2	7.592e-002	4.366e-002
325	648.	634.	29.19	8.38e-002	4.819e-002
326	650.	636.	29.19	8.091e-002	4.653e-002
327	652.	638.	29.19	8.609e-002	4.951e-002
328	654.	640.	29.19	8.685e-002	4.995e-002
329	656.	642.	29.19	8.638e-002	4.968e-002
330	658.	644.	29.19	8.578e-002	4.933e-002
331	660.	646.	29.19	8.197e-002	4.714e-002
332	662.	648.	29.19	8.302e-002	4.774e-002
333	664.	650.	29.19	8.531e-002	4.906e-002
334	666.	652.	29.2	7.957e-002	4.576e-002
335	668.	654.	29.19	8.454e-002	4.862e-002
336	670.	656.	29.2	7.167e-002	4.122e-002
337	672.	658.	29.2	7.759e-002	4.462e-002
338	674.	660.	29.19	9.e-002	5.176e-002
339	676.	662.	29.21	6.714e-002	3.861e-002
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341	680.	666.	29.19	8.213e-002	4.723e-002
342	682.1	668.1	29.21	6.138e-002	3.53e-002
343	684.	670.	29.21	6.484e-002	3.729e-002
344	686.	672.	29.21	6.742e-002	3.877e-002
345	688.	674.	29.2	7.105e-002	4.086e-002
346	690.	676.	29.2	7.803e-002	4.488e-002
347	692.	678.	29.19	8.319e-002	4.784e-002
348	694.	680.	29.19	8.5e-002	4.888e-002
349	696.	682.	29.2	8.059e-002	4.635e-002
350	698.	684.	29.2	7.365e-002	4.236e-002
351	700.	686.	29.19	8.242e-002	4.74e-002
352	702.	688.	29.19	8.879e-002	5.106e-002
353	704.	690.	29.19	9.061e-002	5.211e-002
354	706.	692.	29.19	8.621e-002	4.958e-002
355	708.	694.	29.19	8.287e-002	4.766e-002
356	710.	696.	29.19	8.348e-002	4.801e-002
357	712.	698.	29.19	8.726e-002	5.019e-002
358	714.	700.	29.19	8.864e-002	5.098e-002
359	716.1	702.1	29.21	6.76e-002	3.888e-002
360	718.	704.	29.19	8.186e-002	4.708e-002
361	720.	706.	29.19	8.652e-002	4.976e-002
362	722.	708.	29.19	9.061e-002	5.211e-002
363	724.	710.	29.19	8.85e-002	5.09e-002
364	726.	712.	29.18	9.213e-002	5.299e-002
365	728.	714.	29.19	8.802e-002	5.062e-002
366	730.	716.	29.19	9.033e-002	5.195e-002
367	732.	718.	29.19	9.075e-002	5.219e-002
368	734.	720.	29.19	9.033e-002	5.195e-002
369	736.	722.	29.19	8.668e-002	4.985e-002
370	738.	724.	29.19	8.987e-002	5.169e-002
371	740.	726.	29.2	8.076e-002	4.645e-002
372	742.	728.	29.19	8.442e-002	4.855e-002
373	744.	730.	29.18	9.186e-002	5.283e-002
374	746.	732.	29.18	9.304e-002	5.351e-002
375	748.	734.	29.19	8.925e-002	5.133e-002
376	750.	736.	29.18	9.154e-002	5.265e-002

377	752.	738.	29.19	8.925e-002	5.133e-002
378	754.	740.	29.19	8.485e-002	4.88e-002
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381	760.	746.	29.19	8.726e-002	5.019e-002
382	762.	748.	29.19	8.938e-002	5.14e-002
383	764.	750.	29.19	8.879e-002	5.106e-002
384	766.	752.	29.19	8.168e-002	4.697e-002
385	768.	754.	29.2	7.957e-002	4.576e-002
386	770.	756.	29.19	8.652e-002	4.976e-002
387	772.	758.	29.19	9.061e-002	5.211e-002
388	774.	760.	29.19	9.033e-002	5.195e-002
389	776.	762.	29.19	8.925e-002	5.133e-002
390	778.	764.	29.19	8.41e-002	4.837e-002
391	780.	766.	29.2	7.986e-002	4.593e-002
392	782.	768.	29.2	8.048e-002	4.629e-002
393	784.	770.	29.19	8.957e-002	5.151e-002
394	786.	772.	29.19	8.912e-002	5.126e-002
395	788.	774.	29.19	8.974e-002	5.161e-002
396	790.	776.	29.19	9.033e-002	5.195e-002
397	792.	778.	29.18	9.093e-002	5.229e-002
398	794.	780.	29.19	8.609e-002	4.951e-002
399	796.	782.	29.18	9.154e-002	5.265e-002
400	798.	784.	29.19	8.85e-002	5.09e-002
401	800.	786.	29.19	9.061e-002	5.211e-002
402	802.	788.	29.18	9.379e-002	5.394e-002
403	804.	790.	29.19	8.535e-002	4.909e-002
404	806.	792.	29.19	8.488e-002	4.882e-002
405	808.	794.	29.19	8.322e-002	4.786e-002
406	810.	796.	29.19	8.668e-002	4.985e-002
407	812.	798.	29.18	9.274e-002	5.334e-002
408	814.	800.	29.19	8.864e-002	5.098e-002
409	816.	802.	29.19	8.336e-002	4.794e-002
410	818.	804.	29.19	8.263e-002	4.752e-002
411	820.	806.	29.19	8.399e-002	4.83e-002
412	822.	808.	29.18	9.304e-002	5.351e-002
413	824.	810.	29.18	9.396e-002	5.404e-002
414	826.	812.	29.18	9.2e-002	5.291e-002
415	828.	814.	29.19	9.061e-002	5.211e-002
416	830.	816.	29.19	8.348e-002	4.801e-002
417	832.	818.	29.19	8.227e-002	4.731e-002
418	834.	820.	29.18	9.592e-002	5.516e-002
419	836.	822.	29.18	9.289e-002	5.342e-002
420	838.	824.	29.19	8.864e-002	5.098e-002
421	840.	826.	29.18	9.167e-002	5.272e-002
422	842.	828.	29.19	8.41e-002	4.837e-002
423	844.	830.	29.19	8.091e-002	4.653e-002
424	846.	832.	29.19	8.789e-002	5.055e-002
425	848.	834.	29.19	8.879e-002	5.106e-002
426	850.	836.	29.18	9.396e-002	5.404e-002
427	852.	838.	29.18	9.229e-002	5.308e-002
428	854.	840.	29.19	8.726e-002	5.019e-002
429	856.	842.	29.19	8.41e-002	4.837e-002
430	858.	844.	29.18	9.136e-002	5.254e-002
431	860.	846.	29.18	9.259e-002	5.325e-002
432	862.	848.	29.18	9.322e-002	5.361e-002
433	864.	850.	29.19	9.e-002	5.176e-002

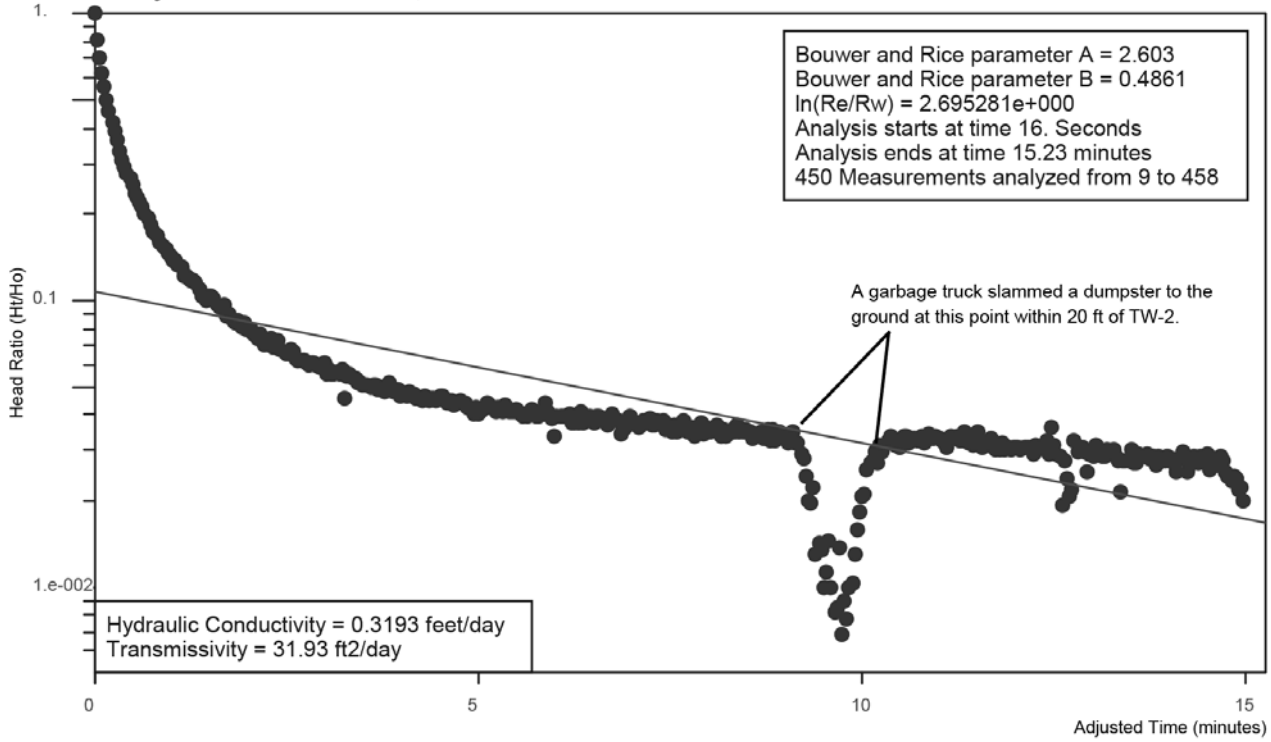
434	866.	852.	29.19	8.85e-002	5.09e-002
435	868.	854.	29.19	8.186e-002	4.708e-002
436	870.	856.	29.19	8.548e-002	4.916e-002
437	872.	858.	29.19	8.974e-002	5.161e-002
438	874.	860.	29.19	9.075e-002	5.219e-002
439	876.	862.	29.19	9.047e-002	5.203e-002
440	878.	864.	29.19	8.987e-002	5.169e-002
441	880.	866.	29.19	8.457e-002	4.864e-002
442	882.	868.	29.19	8.201e-002	4.717e-002
443	884.	870.	29.18	9.167e-002	5.272e-002
444	886.	872.	29.18	9.2e-002	5.291e-002
445	888.	874.	29.18	9.501e-002	5.464e-002
446	890.	876.	29.19	9.033e-002	5.195e-002
447	892.	878.	29.19	8.623e-002	4.959e-002
448	894.	880.	29.18	9.443e-002	5.431e-002
449	896.	882.	29.18	9.2e-002	5.291e-002
450	898.	884.	29.19	8.879e-002	5.106e-002

Slug Test 4/19/13

Bouwer and Rice Graph

Rhodesway North Walterboro, SC

TW-2



Project Number: 14-215778 for Rhodes Oil Company

Ho is 2.045 feet at 16. Seconds

Slug Test

Site Name:	Rhodesway North
Location:	Walterboro, SC
Test Date:	4/19/13
Client:	Rhodes Oil Company
Project Number:	14-215778

Well Label:	TW-2
Aquifer Thickness:	100. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	3.25 Inches
Static Water Level:	32.01 feet
Water Table to Screen Bottom:	33.65 feet
Anisotropy Ratio:	1.
Time Adjustment:	16. Seconds

Test starts with trial 8
There are 458 time and drawdown measurements
Maximum head is 2.045 feet
Minimum head is -9.133e-003 feet

Trial	Time (Seconds)	Adjusted Time (Seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-16.	32.01	0.	0.
2	2.001	-14.	32.02	-9.133e-003	-4.466e-003
3	4.001	-12.	32.	9.973e-003	4.877e-003
4	6.001	-10.	32.	7.595e-003	3.714e-003
5	8.001	-8.	32.01	1.403e-003	6.861e-004
6	10.	-6.	32.01	-6.615e-003	-3.235e-003
7	12.	-4.	32.	1.209e-002	5.911e-003
8	14.	-2.	30.44	1.567	0.7664
9	16.	0.	29.96	2.045	1.
10	18.	2.	30.33	1.675	0.8189
11	20.	4.	30.56	1.45	0.7089
12	22.	6.	30.73	1.28	0.6258
13	24.	8.	30.87	1.134	0.5547
14	26.	10.	30.99	1.022	0.4997
15	28.	12.	31.07	0.9397	0.4595
16	30.	14.	31.16	0.8527	0.417
17	32.	16.	31.21	0.7989	0.3907
18	34.	18.	31.27	0.7384	0.3611
19	36.	20.	31.33	0.6799	0.3325
20	38.	22.	31.37	0.6335	0.3098
21	40.	24.	31.41	0.5985	0.2927
22	42.	26.	31.44	0.5668	0.2772
23	44.	28.	31.46	0.5456	0.2668
24	46.	30.	31.49	0.517	0.2528
25	48.	32.	31.52	0.4837	0.2365
26	50.	34.	31.54	0.4664	0.2281
27	52.	36.	31.56	0.4469	0.2185
28	54.	38.	31.58	0.4322	0.2114
29	56.	40.	31.6	0.4124	0.2017
30	58.	42.	31.61	0.3985	0.1948
31	60.	44.	31.63	0.3775	0.1846
32	62.	46.	31.65	0.3603	0.1762
33	64.	48.	31.66	0.3477	0.17
34	66.	50.	31.66	0.3446	0.1685

35	68.	52.	31.68	0.3239	0.1584
36	70.	54.	31.69	0.3141	0.1536
37	72.	56.	31.7	0.3079	0.1506
38	74.	58.	31.71	0.3009	0.1471
39	76.	60.	31.71	0.2935	0.1435
40	78.	62.	31.72	0.284	0.1389
41	80.	64.	31.73	0.2828	0.1383
42	82.	66.	31.74	0.2728	0.1334
43	84.	68.	31.74	0.2677	0.1309
44	86.	70.	31.76	0.251	0.1227
45	88.	72.	31.76	0.249	0.1217
46	90.	74.	31.76	0.2472	0.1209
47	92.	76.	31.77	0.243	0.1188
48	94.	78.	31.77	0.2391	0.1169
49	96.	80.	31.77	0.2375	0.1162
50	98.	82.	31.78	0.2235	0.1093
51	100.	84.	31.79	0.2134	0.1043
52	102.	86.	31.8	0.2131	0.1042
53	104.	88.	31.8	0.2062	0.1008
54	106.	90.	31.79	0.2131	0.1042
55	108.	92.	31.8	0.2109	0.1031
56	110.	94.	31.8	0.2069	0.1012
57	112.	96.	31.81	0.1961	9.592e-002
58	114.	98.	31.82	0.1931	9.442e-002
59	116.	100.	31.81	0.1953	9.55e-002
60	118.	102.	31.81	0.1968	9.623e-002
61	120.	104.	31.83	0.1817	8.887e-002
62	122.	106.	31.82	0.1832	8.959e-002
63	124.	108.	31.83	0.1753	8.57e-002
64	126.	110.	31.84	0.1707	8.348e-002
65	128.	112.	31.83	0.1742	8.519e-002
66	130.	114.	31.84	0.1703	8.325e-002
67	132.	116.	31.84	0.1647	8.052e-002
68	134.	118.	31.84	0.1714	8.379e-002
69	136.	120.	31.84	0.1639	8.014e-002
70	138.	122.	31.85	0.1621	7.925e-002
71	140.	124.	31.85	0.1581	7.733e-002
72	142.	126.	31.85	0.1565	7.652e-002
73	144.	128.	31.86	0.1513	7.399e-002
74	146.	130.	31.85	0.1573	7.692e-002
75	148.	132.	31.86	0.1483	7.252e-002
76	150.	134.	31.86	0.1439	7.037e-002
77	152.	136.	31.87	0.1428	6.984e-002
78	154.	138.	31.86	0.1523	7.447e-002
79	156.	140.	31.87	0.1418	6.932e-002
80	158.	142.	31.87	0.141	6.895e-002
81	160.	144.	31.86	0.1473	7.205e-002
82	162.	146.	31.87	0.1384	6.77e-002
83	164.	148.	31.87	0.1356	6.63e-002
84	166.	150.	31.87	0.1344	6.57e-002
85	168.	152.	31.88	0.1324	6.473e-002
86	170.	154.	31.87	0.1393	6.811e-002
87	172.	156.	31.87	0.1347	6.586e-002
88	174.	158.	31.88	0.128	6.258e-002
89	176.	160.	31.88	0.1272	6.221e-002
90	178.	162.	31.88	0.1276	6.237e-002
91	180.	164.	31.88	0.1265	6.186e-002

92	182.	166.	31.88	0.125	6.111e-002
93	184.	168.	31.89	0.1229	6.007e-002
94	186.	170.	31.88	0.1238	6.052e-002
95	188.	172.	31.88	0.1235	6.037e-002
96	190.	174.	31.89	0.1215	5.941e-002
97	192.	176.	31.89	0.1203	5.881e-002
98	194.	178.	31.89	0.1197	5.853e-002
99	196.	180.	31.88	0.1246	6.092e-002
100	198.	182.	31.89	0.1144	5.593e-002
101	200.	184.	31.89	0.1178	5.763e-002
102	202.	186.	31.89	0.1133	5.541e-002
103	204.	188.	31.89	0.1139	5.57e-002
104	206.	190.	31.89	0.1147	5.608e-002
105	208.	192.	31.89	0.1144	5.593e-002
106	210.	194.	31.89	0.1173	5.738e-002
107	212.	196.	31.91	9.318e-002	4.556e-002
108	214.	198.	31.9	0.1114	5.445e-002
109	216.	200.	31.89	0.1132	5.533e-002
110	218.	202.	31.9	0.1086	5.311e-002
111	220.	204.	31.9	0.1094	5.348e-002
112	222.	206.	31.9	0.1056	5.163e-002
113	224.	208.	31.9	0.1062	5.194e-002
114	226.	210.	31.9	0.1039	5.081e-002
115	228.	212.	31.9	0.1032	5.045e-002
116	230.	214.	31.9	0.1039	5.081e-002
117	232.	216.	31.91	0.1015	4.965e-002
118	234.	218.	31.91	0.103	5.037e-002
119	236.	220.	31.9	0.1044	5.104e-002
120	238.	222.	31.91	9.983e-002	4.882e-002
121	240.	224.	31.91	0.1029	5.031e-002
122	242.	226.	31.91	0.1014	4.957e-002
123	244.	228.	31.91	9.788e-002	4.786e-002
124	246.	230.	31.9	0.1064	5.204e-002
125	248.	232.	31.91	9.983e-002	4.882e-002
126	250.	234.	31.91	9.895e-002	4.839e-002
127	252.	236.	31.91	0.1001	4.897e-002
128	254.	238.	31.91	9.939e-002	4.86e-002
129	256.	240.	31.91	9.501e-002	4.646e-002
130	258.	242.	31.91	9.682e-002	4.734e-002
131	260.	244.	31.91	9.511e-002	4.651e-002
132	262.	246.	31.91	9.925e-002	4.853e-002
133	264.	248.	31.91	9.619e-002	4.703e-002
134	266.	250.	31.91	9.711e-002	4.749e-002
135	268.	252.	31.92	9.3e-002	4.547e-002
136	270.	254.	31.92	9.3e-002	4.547e-002
137	272.	256.	31.92	9.12e-002	4.46e-002
138	274.	258.	31.91	9.559e-002	4.675e-002
139	276.	260.	31.92	9.3e-002	4.547e-002
140	278.	262.	31.92	9.151e-002	4.475e-002
141	280.	264.	31.91	9.396e-002	4.594e-002
142	282.	266.	31.92	9.258e-002	4.527e-002
143	284.	268.	31.92	9.106e-002	4.453e-002
144	286.	270.	31.91	9.438e-002	4.615e-002
145	288.	272.	31.91	9.501e-002	4.646e-002
146	290.	274.	31.92	9.182e-002	4.49e-002
147	292.	276.	31.92	8.939e-002	4.371e-002
148	294.	278.	31.92	9.029e-002	4.415e-002

149	296.	280.	31.92	9.229e-002	4.513e-002
150	298.	282.	31.92	8.835e-002	4.32e-002
151	300.	284.	31.92	8.923e-002	4.363e-002
152	302.	286.	31.92	9.166e-002	4.482e-002
153	304.	288.	31.92	8.923e-002	4.363e-002
154	306.	290.	31.92	9.029e-002	4.415e-002
155	308.	292.	31.92	8.76e-002	4.284e-002
156	310.	294.	31.92	8.694e-002	4.251e-002
157	312.	296.	31.93	8.288e-002	4.053e-002
158	314.	298.	31.92	8.623e-002	4.216e-002
159	316.	300.	31.93	8.169e-002	3.995e-002
160	318.	302.	31.92	8.578e-002	4.195e-002
161	320.	304.	31.92	8.543e-002	4.178e-002
162	322.	306.	31.92	8.635e-002	4.223e-002
163	324.	308.	31.92	8.939e-002	4.371e-002
164	326.	310.	31.92	8.623e-002	4.216e-002
165	328.	312.	31.92	8.694e-002	4.251e-002
166	330.	314.	31.92	8.439e-002	4.127e-002
167	332.	316.	31.92	8.73e-002	4.269e-002
168	334.	318.	31.92	8.558e-002	4.185e-002
169	336.	320.	31.92	8.411e-002	4.113e-002
170	338.	322.	31.92	8.788e-002	4.297e-002
171	340.	324.	31.92	8.411e-002	4.113e-002
172	342.	326.	31.92	8.383e-002	4.099e-002
173	344.	328.	31.92	8.362e-002	4.089e-002
174	346.	330.	31.92	8.469e-002	4.141e-002
175	348.	332.	31.92	8.383e-002	4.099e-002
176	350.	334.	31.93	8.227e-002	4.023e-002
177	352.	336.	31.93	8.138e-002	3.979e-002
178	354.	338.	31.93	8.075e-002	3.949e-002
179	356.	340.	31.92	8.394e-002	4.105e-002
180	358.	342.	31.92	8.591e-002	4.201e-002
181	360.	344.	31.93	8.243e-002	4.031e-002
182	362.	346.	31.93	8.048e-002	3.935e-002
183	364.	348.	31.93	8.015e-002	3.919e-002
184	366.	350.	31.93	8.227e-002	4.023e-002
185	368.	352.	31.92	8.923e-002	4.363e-002
186	370.	354.	31.92	8.317e-002	4.067e-002
187	372.	356.	31.93	8.061e-002	3.942e-002
188	374.	358.	31.93	7.939e-002	3.882e-002
189	376.	360.	31.94	6.855e-002	3.352e-002
190	378.	362.	31.93	8.09e-002	3.956e-002
191	380.	364.	31.93	8.138e-002	3.979e-002
192	382.	366.	31.93	8.152e-002	3.986e-002
193	384.	368.	31.93	8.061e-002	3.942e-002
194	386.	370.	31.93	8.106e-002	3.964e-002
195	388.	372.	31.93	8.258e-002	4.038e-002
196	390.	374.	31.93	7.681e-002	3.756e-002
197	392.	376.	31.93	7.622e-002	3.727e-002
198	394.	378.	31.93	7.669e-002	3.75e-002
199	396.	380.	31.92	8.333e-002	4.075e-002
200	398.	382.	31.93	7.713e-002	3.771e-002
201	400.	384.	31.93	7.849e-002	3.838e-002
202	402.	386.	31.93	7.817e-002	3.822e-002
203	404.	388.	31.93	8.106e-002	3.964e-002
204	406.	390.	31.93	7.713e-002	3.771e-002
205	408.	392.	31.93	8.075e-002	3.949e-002

206	410.	394.	31.93	8.09e-002	3.956e-002
207	412.	396.	31.93	7.834e-002	3.831e-002
208	414.	398.	31.93	7.849e-002	3.838e-002
209	416.	400.	31.93	7.88e-002	3.853e-002
210	418.	402.	31.93	7.515e-002	3.675e-002
211	420.	404.	31.93	8.198e-002	4.009e-002
212	422.	406.	31.93	7.788e-002	3.808e-002
213	424.	408.	31.93	7.788e-002	3.808e-002
214	426.	410.	31.93	7.849e-002	3.838e-002
215	428.	412.	31.94	6.992e-002	3.419e-002
216	430.	414.	31.94	7.197e-002	3.519e-002
217	432.	416.	31.93	7.455e-002	3.646e-002
218	434.	418.	31.93	8.106e-002	3.964e-002
219	436.	420.	31.93	7.743e-002	3.786e-002
220	438.	422.	31.93	7.607e-002	3.72e-002
221	440.	424.	31.93	7.515e-002	3.675e-002
222	442.	426.	31.93	7.332e-002	3.585e-002
223	444.	428.	31.93	7.576e-002	3.705e-002
224	446.	430.	31.93	7.849e-002	3.838e-002
225	448.	432.	31.93	7.622e-002	3.727e-002
226	450.	434.	31.93	7.88e-002	3.853e-002
227	452.	436.	31.93	7.576e-002	3.705e-002
228	454.	438.	31.93	7.576e-002	3.705e-002
229	456.	440.	31.93	7.834e-002	3.831e-002
230	458.	442.	31.93	7.696e-002	3.763e-002
231	460.	444.	31.93	7.817e-002	3.822e-002
232	462.	446.	31.93	7.32e-002	3.579e-002
233	464.	448.	31.93	7.547e-002	3.69e-002
234	466.	450.	31.93	7.455e-002	3.646e-002
235	468.	452.	31.94	7.181e-002	3.511e-002
236	470.	454.	31.93	7.533e-002	3.683e-002
237	472.	456.	31.94	7.073e-002	3.459e-002
238	474.	458.	31.94	7.211e-002	3.526e-002
239	476.	460.	31.93	7.849e-002	3.838e-002
240	478.	462.	31.94	7.303e-002	3.571e-002
241	480.	464.	31.94	7.151e-002	3.497e-002
242	482.	466.	31.94	7.136e-002	3.49e-002
243	484.	468.	31.93	7.367e-002	3.602e-002
244	486.	470.	31.94	6.88e-002	3.364e-002
245	488.	472.	31.94	7.136e-002	3.49e-002
246	490.	474.	31.93	7.636e-002	3.734e-002
247	492.	476.	31.94	7.016e-002	3.431e-002
248	494.	478.	31.93	7.38e-002	3.609e-002
249	496.	480.	31.94	7.303e-002	3.571e-002
250	498.	482.	31.94	7.17e-002	3.506e-002
251	500.	484.	31.94	7.289e-002	3.564e-002
252	502.	486.	31.93	7.485e-002	3.66e-002
253	504.	488.	31.94	7.289e-002	3.564e-002
254	506.	490.	31.94	6.88e-002	3.364e-002
255	508.	492.	31.93	7.32e-002	3.579e-002
256	510.	494.	31.94	6.939e-002	3.393e-002
257	512.	496.	31.94	7.001e-002	3.423e-002
258	514.	498.	31.94	7.245e-002	3.543e-002
259	516.	500.	31.94	7.073e-002	3.459e-002
260	518.	502.	31.93	7.547e-002	3.69e-002
261	520.	504.	31.94	7.136e-002	3.49e-002
262	522.	506.	31.94	7.303e-002	3.571e-002

263	524.	508.	31.94	7.136e-002	3.49e-002
264	526.	510.	31.94	7.211e-002	3.526e-002
265	528.	512.	31.94	7.17e-002	3.506e-002
266	530.	514.	31.94	6.729e-002	3.291e-002
267	532.	516.	31.94	6.955e-002	3.401e-002
268	534.	518.	31.94	7.001e-002	3.423e-002
269	536.	520.	31.94	6.82e-002	3.335e-002
270	538.	522.	31.94	7.123e-002	3.483e-002
271	540.	524.	31.94	6.729e-002	3.291e-002
272	542.	526.	31.94	7.259e-002	3.549e-002
273	544.	528.	31.94	6.683e-002	3.268e-002
274	546.	530.	31.94	7.259e-002	3.549e-002
275	548.	532.	31.94	6.638e-002	3.246e-002
276	550.	534.	31.94	6.898e-002	3.373e-002
277	552.	536.	31.94	7.107e-002	3.475e-002
278	554.	538.	31.94	6.82e-002	3.335e-002
279	556.	540.	31.94	6.898e-002	3.373e-002
280	558.	542.	31.94	6.562e-002	3.209e-002
281	560.	544.	31.94	6.761e-002	3.306e-002
282	562.	546.	31.94	7.107e-002	3.475e-002
283	564.	548.	31.94	6.562e-002	3.209e-002
284	566.	550.	31.94	6.544e-002	3.2e-002
285	568.	552.	31.95	5.926e-002	2.898e-002
286	570.	554.	31.95	5.789e-002	2.831e-002
287	572.	556.	31.96	4.972e-002	2.431e-002
288	574.	558.	31.97	4.094e-002	2.002e-002
289	576.	560.	31.97	4.002e-002	1.957e-002
290	578.	562.	31.96	4.519e-002	2.21e-002
291	580.	564.	31.98	2.658e-002	1.3e-002
292	582.	566.	31.98	2.894e-002	1.415e-002
293	584.	568.	31.98	2.746e-002	1.343e-002
294	586.	570.	31.99	2.022e-002	9.886e-003
295	588.	572.	31.99	2.292e-002	1.121e-002
296	590.	574.	31.98	2.942e-002	1.439e-002
297	592.	576.	31.99	2.022e-002	9.886e-003
298	594.	578.	31.99	1.688e-002	8.252e-003
299	596.	580.	31.99	1.747e-002	8.541e-003
300	598.	582.	31.98	2.823e-002	1.38e-002
301	600.	584.	31.99	1.399e-002	6.841e-003
302	602.	586.	31.99	1.822e-002	8.908e-003
303	604.	588.	31.99	1.581e-002	7.73e-003
304	606.	590.	31.99	2.022e-002	9.886e-003
305	608.	592.	31.99	2.126e-002	1.039e-002
306	610.	594.	31.98	2.672e-002	1.307e-002
307	612.	596.	31.98	3.26e-002	1.594e-002
308	614.	598.	31.97	3.729e-002	1.823e-002
309	616.	600.	31.97	4.26e-002	2.083e-002
310	618.	602.	31.97	4.305e-002	2.105e-002
311	620.	604.	31.96	5.26e-002	2.572e-002
312	622.	606.	31.95	5.549e-002	2.714e-002
313	624.	608.	31.95	5.67e-002	2.773e-002
314	626.	610.	31.95	6.092e-002	2.979e-002
315	628.	612.	31.95	5.575e-002	2.726e-002
316	630.	614.	31.94	6.396e-002	3.128e-002
317	632.	616.	31.95	6.12e-002	2.993e-002
318	634.	618.	31.94	6.457e-002	3.157e-002
319	636.	620.	31.94	6.638e-002	3.246e-002

320	638.	622.	31.94	6.939e-002	3.393e-002
321	640.	624.	31.94	6.574e-002	3.215e-002
322	642.	626.	31.94	6.396e-002	3.128e-002
323	644.	628.	31.94	6.638e-002	3.246e-002
324	646.	630.	31.94	6.335e-002	3.098e-002
325	648.	632.	31.94	6.85e-002	3.35e-002
326	650.	634.	31.94	6.85e-002	3.35e-002
327	652.	636.	31.94	6.5e-002	3.179e-002
328	654.	638.	31.94	6.638e-002	3.246e-002
329	656.	640.	31.94	6.761e-002	3.306e-002
330	658.	642.	31.94	6.788e-002	3.319e-002
331	660.	644.	31.94	6.593e-002	3.224e-002
332	662.	646.	31.94	6.834e-002	3.342e-002
333	664.	648.	31.94	6.544e-002	3.2e-002
334	666.	650.	31.94	6.834e-002	3.342e-002
335	668.	652.	31.94	7.033e-002	3.439e-002
336	670.	654.	31.94	6.729e-002	3.291e-002
337	672.	656.	31.94	6.699e-002	3.276e-002
338	674.	658.	31.94	6.926e-002	3.387e-002
339	676.	660.	31.94	6.803e-002	3.327e-002
340	678.	662.	31.94	6.593e-002	3.224e-002
341	680.	664.	31.94	6.544e-002	3.2e-002
342	682.	666.	31.95	6.303e-002	3.082e-002
343	684.	668.	31.94	6.65e-002	3.252e-002
344	686.	670.	31.94	6.864e-002	3.356e-002
345	688.	672.	31.94	6.711e-002	3.282e-002
346	690.	674.	31.94	6.834e-002	3.342e-002
347	692.	676.	31.94	6.65e-002	3.252e-002
348	694.	678.	31.94	6.683e-002	3.268e-002
349	696.	680.	31.94	7.136e-002	3.49e-002
350	698.	682.	31.94	6.911e-002	3.379e-002
351	700.	684.	31.94	6.532e-002	3.194e-002
352	702.	686.	31.94	6.439e-002	3.148e-002
353	704.	688.	31.94	6.699e-002	3.276e-002
354	706.	690.	31.94	7.181e-002	3.511e-002
355	708.	692.	31.94	6.562e-002	3.209e-002
356	710.	694.	31.94	6.335e-002	3.098e-002
357	712.	696.	31.94	6.439e-002	3.148e-002
358	714.	698.	31.94	6.472e-002	3.165e-002
359	716.	700.	31.94	6.729e-002	3.291e-002
360	718.	702.	31.95	6.245e-002	3.054e-002
361	720.	704.	31.95	6.184e-002	3.024e-002
362	722.	706.	31.94	6.426e-002	3.142e-002
363	724.	708.	31.95	6.227e-002	3.045e-002
364	726.	710.	31.94	6.544e-002	3.2e-002
365	728.	712.	31.95	6.184e-002	3.024e-002
366	730.	714.	31.95	6.303e-002	3.082e-002
367	732.	716.	31.95	6.152e-002	3.008e-002
368	734.	718.	31.95	6.289e-002	3.075e-002
369	736.	720.	31.95	6.245e-002	3.054e-002
370	738.	722.	31.95	6.259e-002	3.061e-002
371	740.	724.	31.95	6.169e-002	3.016e-002
372	742.	726.	31.94	6.335e-002	3.098e-002
373	744.	728.	31.95	6.259e-002	3.061e-002
374	746.	730.	31.95	6.303e-002	3.082e-002
375	748.	732.	31.94	6.32e-002	3.09e-002
376	750.	734.	31.95	5.942e-002	2.905e-002

377	752.	736.	31.94	6.382e-002	3.121e-002
378	754.	738.	31.95	6.199e-002	3.031e-002
379	756.	740.	31.95	6.289e-002	3.075e-002
380	758.	742.	31.95	6.273e-002	3.068e-002
381	760.	744.	31.94	6.667e-002	3.26e-002
382	762.	746.	31.95	6.001e-002	2.934e-002
383	764.	748.	31.93	7.387e-002	3.612e-002
384	766.	750.	31.94	6.396e-002	3.128e-002
385	768.	752.	31.95	5.942e-002	2.905e-002
386	770.	754.	31.95	5.85e-002	2.861e-002
387	772.	756.	31.97	3.969e-002	1.941e-002
388	774.	758.	31.95	5.698e-002	2.786e-002
389	776.	760.	31.96	4.903e-002	2.398e-002
390	778.1	762.1	31.97	4.21e-002	2.059e-002
391	780.	764.	31.96	4.517e-002	2.209e-002
392	782.	766.	31.94	6.622e-002	3.238e-002
393	784.	768.	31.95	6.075e-002	2.971e-002
394	786.	770.	31.95	6.273e-002	3.068e-002
395	788.	772.	31.95	6.259e-002	3.061e-002
396	790.	774.	31.95	6.063e-002	2.965e-002
397	792.	776.	31.96	5.207e-002	2.546e-002
398	794.	778.	31.95	6.001e-002	2.934e-002
399	796.	780.	31.95	5.877e-002	2.874e-002
400	798.	782.	31.94	6.426e-002	3.142e-002
401	800.	784.	31.95	6.138e-002	3.002e-002
402	802.	786.	31.95	6.199e-002	3.031e-002
403	804.	788.	31.95	5.877e-002	2.874e-002
404	806.	790.	31.95	5.804e-002	2.838e-002
405	808.	792.	31.95	6.214e-002	3.039e-002
406	810.	794.	31.95	6.12e-002	2.993e-002
407	812.	796.	31.95	6.152e-002	3.008e-002
408	814.	798.	31.95	5.804e-002	2.838e-002
409	816.	800.	31.95	5.638e-002	2.757e-002
410	818.1	802.1	31.96	4.372e-002	2.138e-002
411	820.	804.	31.95	5.608e-002	2.742e-002
412	822.	806.	31.95	5.67e-002	2.773e-002
413	824.	808.	31.95	5.608e-002	2.742e-002
414	826.	810.	31.95	6.152e-002	3.008e-002
415	828.	812.	31.95	5.518e-002	2.699e-002
416	830.	814.	31.95	5.575e-002	2.726e-002
417	832.	816.	31.95	6.014e-002	2.941e-002
418	834.	818.	31.95	5.821e-002	2.846e-002
419	836.	820.	31.95	5.865e-002	2.868e-002
420	838.	822.	31.95	5.973e-002	2.921e-002
421	840.	824.	31.95	5.713e-002	2.794e-002
422	842.	826.	31.95	5.804e-002	2.838e-002
423	844.	828.	31.95	5.821e-002	2.846e-002
424	846.	830.	31.95	5.412e-002	2.646e-002
425	848.	832.	31.95	5.894e-002	2.882e-002
426	850.	834.	31.95	5.638e-002	2.757e-002
427	852.	836.	31.95	5.638e-002	2.757e-002
428	854.	838.	31.95	5.821e-002	2.846e-002
429	856.	840.	31.95	5.684e-002	2.779e-002
430	858.	842.	31.95	5.743e-002	2.808e-002
431	860.	844.	31.95	5.518e-002	2.699e-002
432	862.	846.	31.96	5.139e-002	2.513e-002
433	864.	848.	31.95	5.727e-002	2.8e-002

434	866.	850.	31.95	6.033e-002	2.95e-002
435	868.	852.	31.95	5.804e-002	2.838e-002
436	870.	854.	31.96	5.139e-002	2.513e-002
437	872.	856.	31.95	5.426e-002	2.653e-002
438	874.	858.	31.95	5.789e-002	2.831e-002
439	876.	860.	31.95	5.804e-002	2.838e-002
440	878.	862.	31.95	5.549e-002	2.714e-002
441	880.	864.	31.95	5.85e-002	2.861e-002
442	882.	866.	31.95	5.789e-002	2.831e-002
443	884.	868.	31.95	5.501e-002	2.69e-002
444	886.	870.	31.95	6.014e-002	2.941e-002
445	888.	872.	31.96	5.303e-002	2.593e-002
446	890.	874.	31.95	5.713e-002	2.794e-002
447	892.	876.	31.95	5.412e-002	2.646e-002
448	894.	878.	31.95	5.485e-002	2.682e-002
449	896.	880.	31.95	5.836e-002	2.854e-002
450	898.	882.	31.95	5.638e-002	2.757e-002
451	900.	884.	31.96	5.2e-002	2.543e-002
452	902.	886.	31.96	4.972e-002	2.431e-002
453	904.	888.	31.96	4.837e-002	2.365e-002
454	906.	890.	31.96	4.959e-002	2.425e-002
455	908.	892.	31.96	4.896e-002	2.394e-002
456	910.	894.	31.96	4.442e-002	2.172e-002
457	912.	896.	31.96	4.59e-002	2.244e-002
458	914.	898.	31.97	4.094e-002	2.002e-002

APPENDIX G

DISPOSAL MANIFEST

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone 803-957-9175 | 4. Waste Tracking Number 33377

5. Generator's Name and Mailing Address
Rhodes Oil Company
PO Box 1545
Walterboro, SC 29488

Generator's Site Address (if different than mailing address)
1400 North Jefferies Hwy
Walterboro, SC

Generator's Phone: 704.583.2711 Brett Schaefer ECS

6. Transporter 1 Company Name | U.S. EPA ID Number

7. Transporter 2 Company Name: A&D Environmental Services (SC) LLC | U.S. EPA ID Number: SCD987598331

8. Designated Facility Name and Site Address
A&D Environmental Services (SC) LLC
1741 Calks Ferry Road
Lexington, SC 29073

Facility's Phone: 803-957-9175 | U.S. EPA ID Number: SCD987598331

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NON-HAZARDOUS NON-REGULATED MATERIAL Soil Cuttings	28	DM	17444	P	8.72 tons
2.	NON-HAZARDOUS NON-REGULATED MATERIAL Purge Water	6	DM	285	G	
3.						
4.						

13. Special Handling Instructions and Additional Information

In Case of Emergency Call: 803-957-9175 A&D (SC) Job #13370
ECS Project #14-215778

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Brett G. Schaefer (as agent for Rhodes Oil) | Signature: Brett G. Schaefer | Month 4 | Day 19 | Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Brian Butsavage | Signature | Month 4 | Day 29 | Year 13

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) | U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY TO GENERATOR

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone 803-957-9175	4. Waste Tracking Number 33377-2

5. Generator's Name and Mailing Address
Rhodes Oil Company
PO Box 1545
Walterboro, SC 29488

Generator's Site Address (if different than mailing address)
1400 North Jefferies Hwy
Walterboro, SC

Generator's Phone: 704.583.2711 Brett Schaefer ECS

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name A&D Environmental Services (SC) LLC — U.S. EPA ID Number SCD987598331

8. Designated Facility Name and Site Address
A&D Environmental Services (SC) LLC
1741 Calks Ferry Road
Lexington, SC 29073

U.S. EPA ID Number SCD987598331

Facility's Phone: 803-957-9175

9. Waste Shipping Name and Description	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.
1. NON-HAZARDOUS NON-REGULATED MATERIAL Soil Cuttings	5	DM	2500	P
2. NON-HAZARDOUS NON-REGULATED MATERIAL Purge Water	2	DM	500	P
3.				
4.				

13. Special Handling Instructions and Additional Information

In Case of Emergency Call: 803-957-9175 A&D (SC) Job #13370
ECS Project #14-215778

14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Brett G. Schaefer (as agent for Rhodes Oil) — Signature: Brett G. Schaefer — Month 4 Day 19 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Brian Butsavage — Signature: Brian Butsavage — Month 5 Day 1 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

GC Labels • Printed in the USA 1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHW 913-897-6966

APPENDIX H

LOCAL ZONING REGULATIONS

NOT APPLICABLE

APPENDIX I

FATE & TRANSPORT MODELING DATA

NOT APPLICABLE

APPENDIX J

ACCESS AGGREEMENTS

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-097.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☑ Right to Enter **Granted**.

☐ Right to Enter **Denied**.

330 468 1527
Telephone Number

Joseph Salemi
Signature
Property Owner or Agent

Joseph Salemi, General Partner
Print Name Salemi/Redi-Walsh Family LP
Property Owner or Agent

10/18/12
Date

Brett G. Schaefer
Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

9/12/12
Date

Salemi/Redi Walsh Family LP
Rhodesway North
ECS Job # 14-215778

RIGHT TO ENTER AGREEMENT
FOR
CONDUCTING SUBSURFACE INVESTIGATIONS

STATE OF SOUTH CAROLINA
COUNTY OF COLLETON

We, the undersigned, being all of the fee simple owners of certain tracts or parcels designated as Parcel ID 147-00-00-016.000, 147-00-00-089.000 & 147-00-00-088.000 of Colleton County, recognizing the benefits to said properties by reason of conducting subsurface investigations, hereby grant to Rhodes Oil Company, Inc. and its agents the right to enter said properties in accordance with the requirements of the State of South Carolina. Rhodes Oil Company's agent will include Environmental Compliance Services, Inc.

The undersigned hereby covenant and warrant that they are the sole owners of said properties; that they solely have the right to grant this right to enter for conducting subsurface investigations against the lawful claims of all persons whomsoever.

It is agreed that Rhodes Oil Company and its agents shall have the right of future entry for the purpose of maintaining any permanent monitoring points for the duration of the monitoring period, as required by the State of South Carolina Department of Health and Environmental Control (SCDHEC).

It is further agreed that Rhodes Oil Company shall be responsible for restoring any damage done to the ground of said properties by its employees or its agents during the subsurface investigation and monitoring period and that Rhodes Oil Company shall abandon monitoring wells on said properties in accordance with the SCDHEC requirements at the conclusion of the monitoring period.

It is agreed that Rhodes Oil Company shall hold harmless the owner of the aforementioned properties for any personal injury that might be sustained during the course of conducting, and proximately resulting from the conduct of, subsurface investigations.

☒ Right to Enter **Granted**.

843-549-6060
Telephone Number

Signature
Property Owner or Agent

PAUL E. WALKER JR
Print Name
Property Owner or Agent

Date 2/20/13

Paul Walker

☐ Right to Enter **Denied**.

Signature – Brett G. Schaefer, PE, Agent for
Rhodes Oil Company

1/30/13
Date

Rhodesway North
ECS Job # 14-215778

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

BUREAU OF LAND AND WASTE MANAGEMENT
UNDERGROUND STORAGE TANK DIVISION
2600 Bull Street
Columbia, SC 29201
Telephone (803) 896-6241

RIGHT OF ENTRY

Tax Map # 147-00-00-016.00, 147-00-00-088.00, and 147-00-00-089.00

I, PAUL E. WALKER JR **certify that I am the legal owner or the authorized representative for** PAUL E. WALKER JR **(owner) of the property described below. I understand locations for screening points or monitoring wells on the property can be adjusted and I will be provided a sketch map indicating the location(s) of the work to be performed. Permission is hereby granted to The Rhodes Oil Company Incorporated and/or the Agency or their agents to enter the referenced property for the following purposes:**

Name of Facility (if appropriate) : ~~RHODES OIL~~ WALKER ACCOUNTING & TAX SERVICE

Street Address : 1476 JEFFRIES HWY

City, State, ZIP : Walterboro, South Carolina 29488

1) **Drilling of screening points. The work will be properly abandoned upon completion, and no permanent effects shall remain on site.**
2) **Installing monitoring wells. I understand that these wells will remain on the property until cleanup is complete.**
3) **Additionally, the Agency and Rhodes Oil Company or its agents will access the property at reasonable times for measurement and/or collection of groundwater samples.**
4) **The monitoring wells will be properly abandoned upon completion of remediation activities.**

NAME (Please print) : PAUL E. WALKER JR

SIGNATURE : [signature]

WITNESS : D Rigon

DATE SIGNED : 2/20/13

Contact Telephone Number to Coordinate Dates of Work 843-549-6000 WORK
843-908-4596 CELL

Please Return to the Attention of Arthur Shrader, 2600 Bull St, Columbia, SC 29201
Reference UST Permit # 02567

S.C. Department of Transportation
Form 637 (Rev 4 2008)

Application for Encroachment Permit

RecId: 8814

Permit Nbr: 148560

Applicant: Environmental Complance Services
County: Colleton

		Cnty/Route:	Road Name:
Street:	13504 South Point Blvd, Unit F		
City:	Charlotte	1. US-15	North Jefferies Hwy
State:	NC **Zip:** 28273	2. SC-64	Robertson Blvd
Phone:	704-583-2711	3.	
Fax:	704-583-2744	4.	
Contact:	Brett Schaefer	5.	

1. Type of Encroachment:

Monitoring well Installations

2. Description of Location:

North side of Robertson Blvd 700 ft East from intersection of N. Jefferies Hwy.

East side of N. Jefferies Hwy, 700 ft North from intersection of Robertson Blvd.

Map Attached 3-wells on each Road (Shoulder only)

(Attach sketch indicating roadway features such as: pavement width, shoulder width, sidewalk and curb and gutter location, significant drainage structure, north arrow, right of way width, and location of the proposed encroachment with respect to the roadway centerline and the nearest intersecting road on the State system.)

3. The undersigned applicant hereby requests the SCDOT to permit encroachment on the SCDOT right of way as described herein. It is expressly understood that the encroachment, if and when constructed, shall be installed in accordance with the sketch attached hereto and made a part hereof.

The applicant agrees to comply with and be bound by the SCDOT's "A Policy for Accommodating Utilities on Highways Rights of way", "Standard Specifications for Highway Construction", the "General Provisions" and "Special Provisions", attached hereto or made a part hereof by reference, during the installation, operation and maintenance of said encroachment within the SCDOT's Right of Way.

DISCHARGES OF STORM WATER AND NON-STORM WATER: Work within State Highway right-of-way shall be conducted in compliance with all applicable requirements of the National Pollutant Discharge Elimination System (NPDES) permit(s) issued to the Department of Transportation (Department), to govern the discharge of storm water and non-storm water from its properties. Work shall also be in compliance with all other applicable Federal, State and Local laws and regulations, and with the Department's Encroachment Permits Manual and encroachment permit. The encroachment permit will not be issued until the applicant has received an NPDES construction permit from SC Department of Health and Environmental Control.

The applicant agrees to comply with all current SCDOT Standards Specifications for Highway Construction including all Supplemental Technical Specifications. The applicant hereby further agrees, and binds his/her/its heirs, personal representatives, successors, assigns, to assume any and all liability for accidents or injuries to persons, or damage to property, including the highway, that may be caused by the construction, maintenance, use, moving or removing of the physical appurtenances contemplated herein, and the applicant agrees to indemnify and hold SCDOT harmless from and against any and all claims for personal injury and/or property damage which may be sustained by any person by reason of the construction, maintenance or existence of said encroachment on the SCDOT's right of way.

Applicant's Name: Brett G. Schaefer (Please print or type) **Date:** 3/6/2013

Applicant's Sig: Brett G. Schaefer **Title:** Project Manager

In accordance with your request and subject to all the provisions, terms, conditions, and restrictions stated in the application and the general and special provisions attached hereto, the SCDOT hereby approves your application for an encroachment permit. This permit shall become null and void unless the work contemplated herein shall have been completed prior to: 3/8/2014

■ See Attached Special Provisions and/or Permit Requirements **NPDES Permit Nbr:**

3/8/2013		3/8/2013
(Date received by Res. Maint. Engr.)	(SCDOT Approval)	(Date)

■ Resident Maintenance Engineer ■ Deputy Secretary for Engineering
■ District Engineering Administrator ■ District Maint./Constr. Engineer

Application for Encroachment Permit

General Provisions

Permit Nbr: 148560

1. DEFINITIONS: The word "Permittee" used herein shall mean the name of the person, firm, or corporation to whom this permit is addressed, his, her, its, heirs, personal representatives, successors and assigns. The word "DEPARTMENT" shall mean the South Carolina Department of Transportation.

2. NOTICE PRIOR TO STARTING WORK: Before starting the work contemplated herein within the limits of the highway right of way, the Department's Resident Maintenance Engineer in the county in which the proposed work is located shall be notified 24 hours in advance so that he may be present while the work is under way.

3. PERMIT SUBJECT TO INSPECTION: This permit shall be kept at the site of the work at all times while said work is under way and must be shown to any representative of the Department or law enforcement officer on demand.

4. PROTECTION OF HIGHWAY TRAFFIC: The applicant shall be responsible for the protection of the highway traffic at all times during the construction, maintenance, removing or moving of the encroachment permitted herein. Detours, barricades, warning signs and flagmen, as necessary, shall be provided by and at the expense of the Permittee and shall be in accordance with the "Manual on Uniform Traffic Control Devices" (MUTCD). The work shall be planned and carried out so that there will be the least possible inconvenience to the motoring public. The Permittee agrees to observe all rules and regulations of the Department while carrying on the work contemplated herein and take all other precautions that circumstances warrant.

5. STANDARDS OF CONSTRUCTION: All work shall conform to the Department's standards of construction and shall be performed in a workman-like manner. The applicant shall make adequate provisions for maintaining the proper drainage of the highway as it may be affected by the encroachment permitted herein. All work shall be subject to the supervision and satisfaction of the Department.

6. FUTURE MOVING OF PHYSICAL APPURTENANCES: If, in the opinion of the State Highway Engineer, it should ever become necessary to move or remove the physical appurtenances, or any part thereof contemplated herein, on account of change in location of the highway, widening of the highway, or for any other sufficient reason, such moving shall be done on demand of the Department at the expense of the Permittee.

7. RESTORATION OF HIGHWAY FACILITIES UPON MOVING OR REMOVING OF PHYSICAL APPUTENANCES: If, and when, the physical appurtenances contemplated herein shall be moved or removed, either on the demand of the Department or at the option of the Permittee, the highway and facilities shall immediately be restored to their original condition at the expense of the Permittee.

8. COSTS: All work in connection with the construction, maintenance, moving or removing of the physical appurtenances contemplated herein shall be done by and at the expense of the permittee.

9. ADDITIONAL PERMISSIONS:

(a) It is distinctly understood that this permit does not in any way grant or release any rights lawfully possessed by the abutting property owners. The Permittee shall secure any such rights, as necessary, from said abutting property owners.

(b) The Permittee shall be responsible for obtaining all other approvals or permits necessary for installation of the encroachment from other government entities.

(c) There shall be no excavation of soil nearer than two feet to any public utility line or appurtenant facility except with the consent of the owner thereof, or except upon special permission of this Department after an opportunity to be heard is given the owner of such line or appurtenant facility.

10. ADDITIONAL WORK PERFORMANCE:

(a) All crossings over the highway shall be constructed in accordance with "Specifications for Overhead Crossings of Light and Power Transmission Lines and Telegraph Lines over each other and over Highway Rights of Way in South Carolina," as approved by the Public Service Commission of South Carolina and effective as of date of this permit.

(b) All tunneling, boring, or jacking shall be done in such a way as not to disturb the highway surfacing.

(c) No pavement shall be cut unless specifically authorized herein.

(d) No excavation shall be nearer than three feet to the edge of pavement unless specifically authorized herein.

(e) Underground facilities will be located at minimum depths as defined in the "Utility Accommodations Manual" for the transmittant, generally as follows: 4 feet minimum for hazardous or dangerous transmittant, 3 feet minimum for other lines. The Department may approve shallower depths if adequate protection is provided. Such approval must be obtained in writing.

(f) Service and other small diameter pipes shall be jacked, driven, or otherwise forced underneath the pavements on any surfaced road without disturbing the pavement. The section under the highway pavement and within a distance of three (3) feet on either side shall be continuous without joints.

11. ACCESS:

(a) Permittee is responsible for maintaining reasonable access to private driveways during construction.

(b) It is expressly provided that, with respect to any limited access highway, the Permittee shall not have or gain access from the main traveled way of the highway, or the on or off ramps to such facility, except upon approval by the Department.

12. DRIVEWAYS:

(a) The existing crown of the highway shall be continued to the outside shoulder line of the highway.

(b) If the driveway or approach is concrete pavement, the pavement shall be constructed at least 6 inches thick and with a minimum of class 2500 concrete. There shall be a bituminous expansion joint, not less than 3/4 inches in thickness, placed between the highway paving and the paving of the approach for the full width of the approach.

13. BEAUTIFICATION:

(a) All trees, plants, flowers, etc. shall be placed in accordance with the provisions specifically stipulated herein.

(b) All trees, plants, flowers, etc. shall be maintained by, and at the expense of, the Permittee and the provisions of this permit shall become null and void, if and when said Permittee ceases to maintain said trees, plants, flowers, etc.

14. AS-BUILT PLANS:

(a) The applicant shall provide the Department with survey-quality as-built plans in accordance with the requirements set forth in the Department's "A Policy for Accommodating Utilities on Highway Rights of Way".

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION
HIGHWAY MAINTENANCE MANAGEMENT SYSTEM

Encroachment Permit

Permit No: **148560**
Permit Decision Date: **March 8, 2013**
Expiration Date: **March 8, 2014**

Type Permit

ENVIRONMENTAL

Location

District	Work County	Type	Route	Aux	Begin MP	End MP
6	COLLETON	SC	64	00	22.83	22.96
	COLLETON	US	15	00	1.20	1.33

Contact Information

Applicant: **ENVIRONMENTAL COMPLANCE SERVIC** Phone: **(704) 583-2711**
Contact: **BRETT SCHAEFER** Phone:
Address: **13504 SOUTH POINT BLVD.,UNIT F**

City: **CHARLOTTE** State: **NC** Zip: **28273**

Comments

APPLICANT REQUEST PERMISSION TO INSTALL MONITORING WELLS ON THE NORTH SIDE OF ROBERTSON BLVD.(SC-64) 700' EAST FROM INTERSECTION OF N. JEFFERIES HWY.(US-15) EAST OF N. JEFFERIES HWY. 700' NORTH FROM INTERSECTION OF ROBERTSON BLVD.

Special Provisions

104 - ALL VALVES AND MANHOLES SHALL CONFORM TO THE EXISTING ELEVATION OF THE ROADWAY OR SHOULDER AND CONFORM TO THE ACCEPTED STANDARD. THE VALVES WILL BE LOCATED OUT OF THE PAVEMENT. THEY SHALL NOT BE PLACED IN A DITCH FLOW LINE.

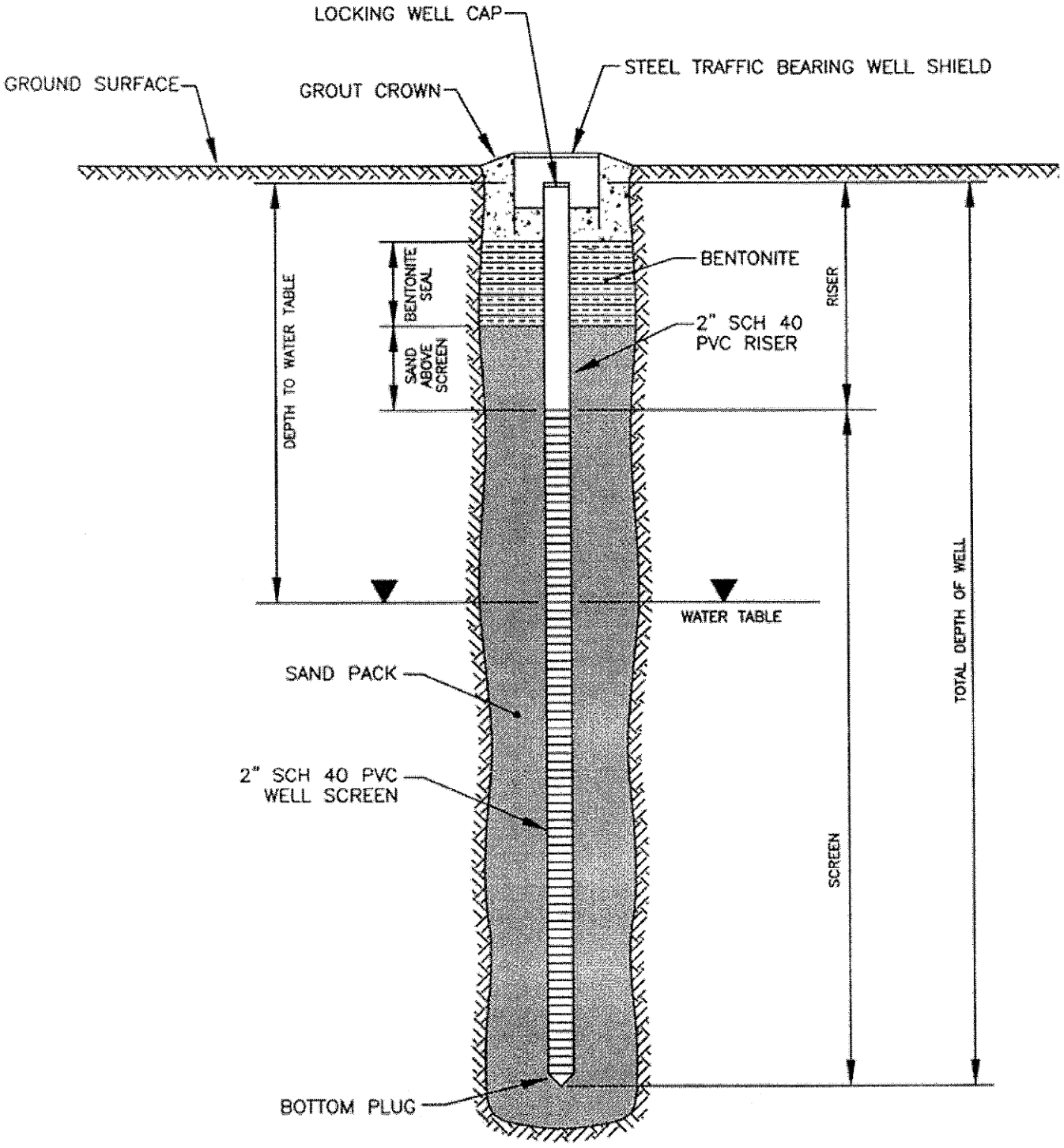
209 - DISTURBED VEGETATION SHALL BE RESEEDED ACCORDING TO THE SPECIFICAION FOR HIGHWAY CONSTRUCTION.

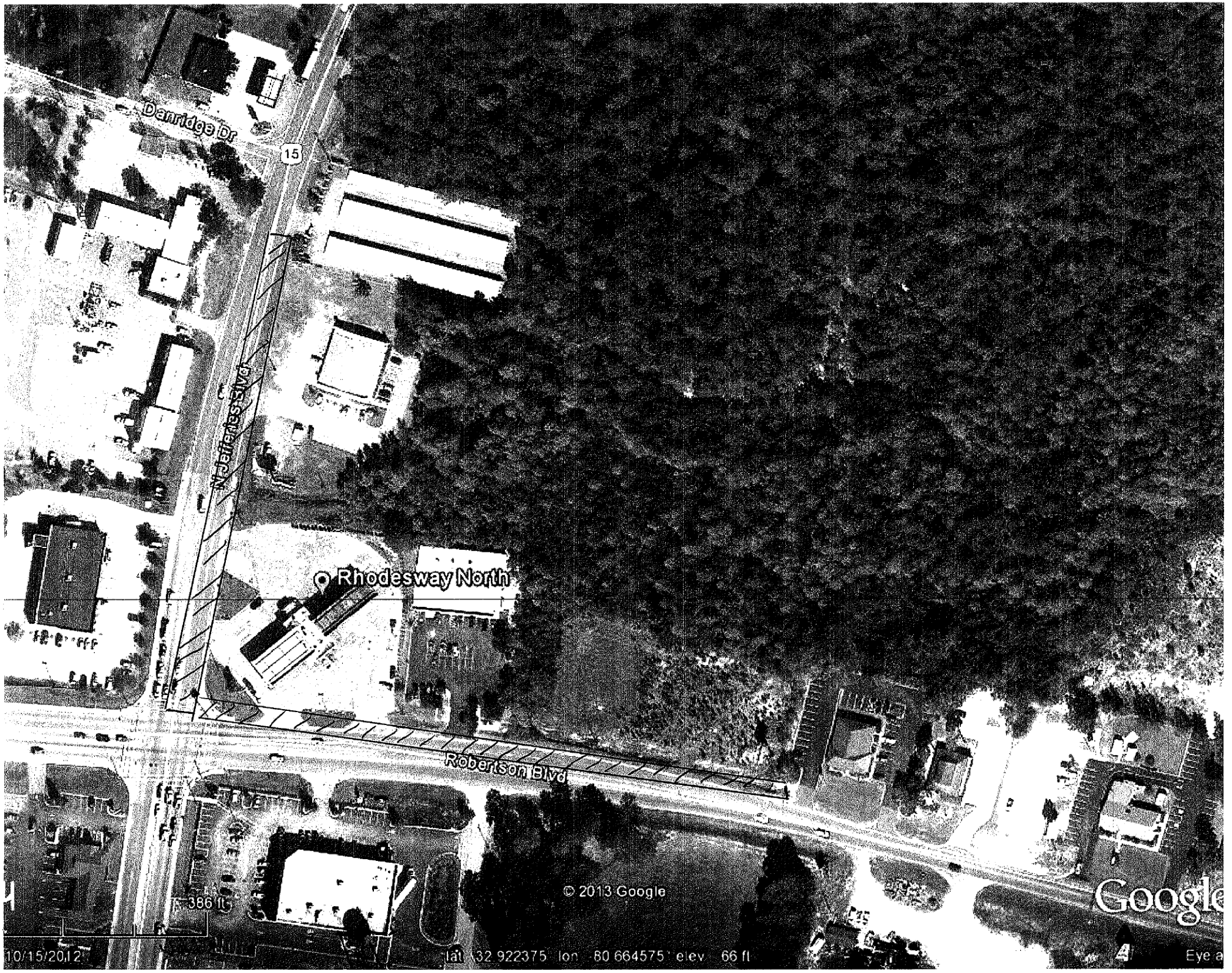
306 - TRAFFIC CONTROL, LIGHTS, SIGNS AND FLAG-MEN WILL BE FURNISHED BY APPLICANT AND WILL CONFORM TO PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

315 - TEST WELL SHALL BE LOCATED OUTSIDE OF WHEEL PATH.

318 - THE APPLICANT SHALL BE RESPONSIBLE FOR IMMEDIATE REMOVAL OF SUCH TRAFFIC HAZARDS AS MUD, DEBRIS, LOOSE STONE, AND TRASH AS MAY BE WASHED OR SPILLED ON THE TRAVELED ROADWAY AS A RESULT OF THE PROPOSED WORK.

4 - SCDOT SHALL BE NOTIFIED WHEN WORK DEFINED IN THE PERMIT STARTS AS WELL AS WHEN THE WORK IS COMPLETED. REFERENCE SHALL BE MADE BY PERMIT NUMBER.


LOCKING WELL CAP
STEEL TRAFFIC BEARING WELL SHIELD
GROUND SURFACE
GROUT CROWN
BENTONITE SEAL
SAND ABOVE SCREEN
BENTONITE
2" SCH 40 PVC RISER
RISER
DEPTH TO WATER TABLE
WATER TABLE
SAND PACK
2" SCH 40 PVC WELL SCREEN
SCREEN
TOTAL DEPTH OF WELL
BOTTOM PLUG


Danridge Dr
15
N Jefferson Blvd
Rhodesway North
Robertson Blvd
386 ft
© 2013 Google
Google
10/15/2012
lat 32.922375 lon -80.664575 elev 66 ft
Eye a

APPENDIX K

DATA VERIFICATION CHECKLIST

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	✓		
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?	✓		
10	Has current use of the site and adjacent land been described?	✓		
11	Has the site-specific geology and hydrogeology been described?	✓		
12	Has the primary soil type been described?	✓		
13	Have field screening results been described?	✓		
14	Has a description of the soil sample collection and preservation been detailed?	✓		
15	Has the field screening methodology and procedure been detailed?	✓		
16	Has the monitoring well installation and development dates been provided?	✓		
17	Has the method of well development been detailed?	✓		
18	Has justification been provided for the locations of the monitoring wells?	✓		
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?	✓		
26	Does the report include a brief discussion of the aquifer evaluation and results?	✓		
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	✓		
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	✓		
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)	✓		
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)			✓
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)			✓
47	Have the soil boring/field screening logs been provided? (Appendix D)	✓		
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	✓		
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	✓		
50	Have the disposal manifests been provided? (Appendix G)	✓		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)	✓		
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

DHEC
PROMOTE PROTECT PROSPER

Shrader, Art A. <shradeaa@dhec.sc.gov>

UST Permit # 02567

Paul Walker Private Potable Water Supply Well

5 messages

Shrader, Art A. <shradeaa@dhec.sc.gov> Mon, May 20, 2013 at 3:58 PM
To: "Berry, Russell" <berryre@dhec.sc.gov>
Cc: "Jones, James R." <jonesjr@dhec.sc.gov>, Christopher Vaigneur <vaignecl@dhec.sc.gov>, Scott Burson <bursonsj@dhec.sc.gov>, "Schaefer, Brett" <bschaefer@ecsconsult.com>

Russell,

I'm trying to find details on a potable well in Walterboro. Any help would be greatly appreciated. I do not need someone to make a site visit or call at this time. The private well was sampled on April 17 and no petroleum Chemicals of Concern (CoC) were detected in Mr. Walker's potable well. What I know:

Well Owner Paul Walker, Walker Accounting & Tax
Well Location: 1476 North Jefferies Hwy, Walterboro, SC
Tax Map: 147-00-00-016.000
Property is adjacent to: Rhodesway North (UST Permit # 02567)
Maps of the UST facility and the adjacent property with the water supply well are attached FYI.
The Assessment Report for Rhodes Oil Company documents over a foot of product at the UST facility.
Soil at 5 feet below the land surface: Sand 83%, silt 5%, clay 12%
Soil at 30 feet below land surface: Sand 95%, silt 1%, clay 4%

My concern is the Walker well may pull petroleum CoC from Rhodesway North into this potable well if the private well is very shallow or poorly constructed. Previous assessment reports did not identify a water supply well and I have concentrated my efforts on the storm water ditch on the north side of the Rhodesway North facility.

THANK YOU in advance for your help and any information.

Art

Please Note We Are Moving to Bull Street Early in June 2013.
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

UST DOCKETING 20 Dec

02567 WSW Paul Walker.pdf
821K

Berry, Russell <berryre@dhec.sc.gov> Mon, May 20, 2013 at 4:18 PM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>
Cc: "Jones, James R." <jonesjr@dhec.sc.gov>, Christopher Vaigneur <vaignecl@dhec.sc.gov>, Scott Burson <bursonsj@dhec.sc.gov>, "Schaefer, Brett" <bschaefer@ecsconsult.com>, Penny Cornett <cornetpa@dhec.sc.gov>, "Longshore, Mike" <longshhm@dhec.sc.gov>

[Quoted text hidden]

Berry, Russell <berryre@dhec.sc.gov> Mon, May 20, 2013 at 4:27 PM
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>
Cc: "Jones, James R." <jonesjr@dhec.sc.gov>, Christopher Vaigneur <vaignecl@dhec.sc.gov>, Scott Burson <bursonsj@dhec.sc.gov>, "Schaefer, Brett" <bschaefer@ecsconsult.com>, "Longshore, Mike" <longshhm@dhec.sc.gov>, Penny Cornett <cornetpa@dhec.sc.gov>

Art,

Thanks for the heads up on this!

I have copied Mike Longshore who is now working in the Private Well program in Columbia, BOW and Penny Cornett in this office to see if it has a private or small water system permit. If it has a permit there may be a drillers log for the well.

If not then it would take a site visit to gather more info. Since we have an RP I would prefer they do more extensive evaluation if no permit is found.

Thanks
Russell

On Mon, May 20, 2013 at 3:58 PM, Shrader, Art A. <shradeaa@dhec.sc.gov> wrote:
[Quoted text hidden]

Cornett, Penny <cornetpa@dhec.sc.gov> Mon, May 20, 2013 at 4:33 PM
To: "Berry, Russell" <berryre@dhec.sc.gov>
Cc: "Shrader, Art A." <shradeaa@dhec.sc.gov>, "Jones, James R." <jonesjr@dhec.sc.gov>, Christopher Vaigneur <vaignecl@dhec.sc.gov>, Scott Burson <bursonsj@dhec.sc.gov>, "Schaefer, Brett" <bschaefer@ecsconsult.com>, "Longshore, Mike" <longshhm@dhec.sc.gov>

Art,

The well was drilled in July of 2000 by Timothy Lane, cert # 1296. The well depth is 505 feet, casing depth is 160 feet. Grouted from surface to 20 feet. Pump capacity is 20 gpm. Let me know if you would like a copy of the drillers log.

Penny
[Quoted text hidden]
–
Penny Cornett
SC Department of Health and Environmental Control
Low Country EQC Region - Beaufort
104 Parker Drive
Beaufort, SC 29906
Office: 843-846-1030
Fax: 843-846-0604
Cell: 843-473-5048

Shrader, Art A. <shradeaa@dhec.sc.gov> Mon, May 20, 2013 at 4:43 PM
To: "Cornett, Penny" <cornetpa@dhec.sc.gov>
Cc: "Berry, Russell" <berryre@dhec.sc.gov>, "Jones, James R." <jonesjr@dhec.sc.gov>, Christopher Vaigneur <vaignecl@dhec.sc.gov>, Scott Burson <bursonsj@dhec.sc.gov>, "Schaefer, Brett" <bschaefer@ecsconsult.com>,

"Longshore, Mike" <longshhm@dhec.sc.gov>

Penny,

WOW! A huge **THANK YOU**!

When you get a minute, please send a copy of the well log. I'm curious if the sand extends all the way to 505 feet or if there is a confining unit.

Again THANK YOU!

Art

[Quoted text hidden]

–

Please Note We Are Moving to Bull Street Early in June 2013.
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

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Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

LAWTON R. SMITH
RHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

DEC 0 9 2014

Re: **Letter of Concern (LOC)**
Rhodesway North
1400 Jefferies Highway, Walterboro, SC 29488
UST Permit # 02567
LOC Requested via email on December 9, 2014
Colleton County

Dear Mr. Smith:

You requested that this office provide you with an update on the environmental conditions at the above referenced facility.

We received a report on April 14, 2011 documenting petroleum chemicals of concern in the subsurface in the vicinity of the former underground storage tanks. Our records reveal that five (5) underground storage tank (USTs) owned by Rhodes Oil Company Inc. are currently in use at the referenced property. In response to the initial report of petroleum chemicals of concern, we directed Rhodes Oil Company Inc., as the party responsible for performing this activity under state and federal law, to assess the extent and severity of the contamination. A groundwater sampling event is required in the near future.

The UST Division would also like to clarify for you the financial and liability issues surrounding the petroleum chemicals of concern at this facility. The release of petroleum products from the UST is qualified to receive funding from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. This means that reasonable costs up to $1,000,000 can be paid by the SUPERB Account for site rehabilitation actions associated with this release. To date $26,290.53 has been spent for rehabilitation actions.

In 1997, the General Assembly amended Section 80 (B) of the SUPERB Act to clarify that persons who hold "indicia of ownership" primarily to protect a security interest in property impacted by a release from a UST are exempt from the requirements to conduct site rehabilitation activities other than necessary abatement actions to eliminate any imminent threat to human health or the environment. The "indicia of ownership" exemption includes those persons who acquire title to the property through foreclosure or other means necessary to protect their security interest, provided that person does not participate in the management of the UST and is not otherwise engaged in petroleum production, marketing, or refining. This applies equally to subsequent lenders who acquire the USTs and property through foreclosure in the future.

The Division is not aware of any laws or regulations that prohibit the use or development of properties where a petroleum release has occurred. Any future work required by the Agency should not cause any damage to the building, disrupt deliveries, prevent access to customers, or block main access routes. To further assure you, any required activities associated with the petroleum release would be performed by a SC Certified Site Rehabilitation Contractor who maintains specific levels of insurance coverage for General and Professional Liability and Pollution/Property Damage. Such coverage is required by Section IV of the SUPERB Site Rehabilitation and Fund Access Regulations R. 61-98.

If you have any questions, please contact me at (803) 898-0606. I can also be reached by email at bryant@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Bell Carrington, Attn: Tyler S. Gregg, 508 Hampton Street, Suite 301, Columbia, SC 29201
Technical File

D H E C
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Catherine B. Templeton, Director
Promoting and protecting the health of the public and the environment

LAWTON R. SMITH
ROHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

DEC 10 2014

Re: **Site Specific Work Plan Request**
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC 29488
UST Permit # 02567
Release Reported April 14, 2011
Tier II Report Received May 14, 2013
Walterboro County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a groundwater sampling event as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0 is necessary. All monitoring wells, water supply wells, and surface waters associated with the release should be sampled for BTEX, naphthalene, MtBE, 1,2-DCA, 8-Oxygenates and EDB. The groundwater sampling event should be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of the Agency's QAPP for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that technical and financial preapproval from the Agency must be issued before work begins**.

On all correspondence regarding this site, please reference UST Permit #02567. If you have questions or need additional information, feel free to call me at (803) 898-0606.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Environmental Compliance Services, PO Box 3528, Fort Mill, SC 29708

Technical File

DHEC
PROMOTE PROTECT PROSPER

Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

UST DOCKETING 23 tcel

To: Mr. John C. Bryant (SCDHEC Project Manager)
From: Noelle France (Contractor Project Manager)
Contractor: ECS, Inc. UST Contractor Certification Number: _____

Facility Name: Rhodesway North UST Permit #: 02567
Facility Address: 1400 Jeffries Highway, Walterboro, SC
Responsible Party: Rhodes Oil Company Phone: (843) 549-5521
RP Address: P.O. Box 1545, Walterboro, South Carolina 29488
Property Owner (if different): _____
Property Owner Address: _____
Current Use of Property: Gas station and convenience store

Scope of Work (Please check all that apply)

- ☐ IGWA
- ☐ Tier I
- ☐ Tier II
- ☐ Monitoring Well Installation
- ☑ Groundwater Sampling
- ☐ Other _____
- ☐ GAC

Analyses (Please check all that apply)

Groundwater/Surface Water:

- ☑ BTEXNMDCA (8260B)
- ☑ Oxygenates (8260B)
- ☑ EDB (8011)
- ☐ PAH (8270D)
- ☐ Lead
- ☐ 8 RCRA Metals
- ☐ TPH
- ☐ pH
- ☐ BOD
- ☐ Nitrate
- ☐ Sulfate
- ☐ Other _____
- ☐ Methane
- ☐ Ethanol
- ☐ Dissolved Iron

Soil:

- ☐ BTEXN
- ☐ PAH
- ☐ 8 RCRA Metals
- ☐ Oil & Grease (9071)
- ☐ TPH-DRO (3550B/8015B)
- ☐ TPH-GRO (5030B/8015B)
- ☐ Grain Size
- ☐ TOC

Air:

- ☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

____ Soil	1 Water Supply Wells	____ Air	2 Field Blank
27 Monitoring Wells	2 Surface Water	2 Duplicate	2 Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.
# of shallow points proposed: _____ Estimated Footage: _____ feet per point
# of deep points proposed: _____ Estimated Footage: _____ feet per point
Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.
# of shallow wells: _____ Estimated Footage: _____ feet per point
# of deep wells: _____ Estimated Footage: _____ feet per point
# of recovery wells: _____ Estimated Footage: _____ feet per point
Monitoring Well development method (consistent with SOP): _____
Comments, if warranted:

DHEC 0653 (08/2013) SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

UST Permit #: 02567 Facility Name: Rhodesway North

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 7 days Field Work Completion: 7 days
Report Submittal: 21 # of Copies Provided to Property Owners: _____

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal
Soil: _____ Tons Purge Water: 500 Gallons
Drilling Fluids: _____ Gallons Free-Phase Product: _____ Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
Groundwater monitoring wells 02567-MW1 through 02567-MW22, 02567-RW1, 2 and 3, 02567-TW1 and 2, will be purged and sampled. One water supply well will be sampled and two surface water samples will be collected from a stormwater ditch on the northern side of the site. The samples will be analyzed for BTEXMN, 1,2 DCA by EPA Method 8260B to include the 8 oxygenates and for EDB by EPA Method 8011.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

____ Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

ASSESSMENT COMPONENT COST AGREEMENT

SOUTH CAROLINA

Department of Health and Environmental Control

Underground Storage Tank Management Division

State Underground Petroleum Environmental Response Bank Account

May 15, 2014

Facility Name: Rhodesway North

UST Permit #: 02567 **Cost Agreement #:** _____

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. **Plan Preparation**				
A1. Site-specific Work Plan	1	each	$150.00	$150.00
B1. Tax Map		each	$70.00	$0.00
C1. Tier II or Comp. Plan /QAPP Appendix B		each	$250.00	$0.00
2. A1. **Receptor Survey ***		each	$551.00	$0.00
3. **Survey (500 ft x 500 ft)**				
A1. Comprehensive Survey		each	$1,040.00	$0.00
B. Subsurface Geophysical Survey				
1B. < 10 meters below grade		each	$1,300.00	$0.00
2B. > 10 meters below grade		each	$2,310.00	$0.00
C1. Geophysical UST or Drum Survey		each	$910.00	$0.00
4. **Mob/Demob**				
A1. Equipment		each	$1,020.00	$0.00
B1. Personnel	1	each	$423.00	$423.00
C1. Adverse Terrain Vehicle		each	$500.00	$0.00
5. A1. **Soil Borings (hand auger)***		foot	$5.00	$0.00
6. **Soil Borings (requiring equipment, push technology, etc)* or Field Screening (including water ssample, soil sample, soil gas sample, etc.)**				
AA. Standard		per foot	$15.00	$0.00
C1. Fractured Rock		per foot	$20.20	$0.00
7. A1. **Soil Leachability Model**		each	$60.00	$0.00
8. **Abandonment (per foot)***				
A1. 2" diameter or less		per foot	$3.10	$0.00
B1. Greater than 2" to 6" diameter		per foot	$4.50	$0.00
C1. Dug/Bored well (up to 6 feet diameter)		per foot	$15.00	$0.00
9. **Well Installation (per foot)***				
A1. Water Table (hand augered)		per foot	$10.60	$0.00
B1. Water Table (drill rig)		per foot	$38.00	$0.00
CC. Telescoping		per foot	$50.00	$0.00
DD. Rock Drilling		per foot	$58.00	$0.00
E1. 2" Rock Coring		per foot	$30.90	$0.00
G1. Rock Multi-sampling ports/screens		per foot	$33.40	$0.00
HH. Recovery Well (4" diameter)		per foot	$45.00	$0.00
II. Pushed Pre-packed screen (1.25" dia)		per foot	$15.00	$0.00
J1. Rotosonic (2" diameter)		per foot	$44.00	$0.00
K. Re-develop Existing Well		per foot	$11.00	$0.00
10. **Groundwater Sample Collection / Gauge Depth to Water or Product ***				
A1. Groundwater Purge	27	er well/recept	$60.00	$1,620.00
B1. Air or Vapors		per recepto	$12.00	$0.00
C1. Water Supply	1	er well/recept	$22.00	$22.00
D1. Groundwater No Purge or Duplicate	4	er well/recept	$28.00	$112.00
E1. Gauge Well only		per well	$7.00	$0.00
F1. Sample Below Product		per well	$12.00	$0.00

G1. Passive Diffusion Bag		each	$26.00	$0.00
H1. Field Blank	2	each	$24.60	$49.20
11. Laboratory Analyses-Groundwater				
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(82	36	per sample	$122.00	$4,392.00
AA1. Lead, Filtered		per sample	$13.80	$0.00
B2. Rush EPA Method 8260B (All of item A.)		per sample	$153.60	$0.00
C2. Trimethal, Butyl, and Isopropyl Benzenes		per sample	$36.40	$0.00
D1. PAH's		per sample	$60.60	$0.00
E1. Lead		per sample	$16.00	$0.00
F1. EDB by EPA 8011	34	per sample	$45.20	$1,536.80
FF1. EDB by EPA Method 8011 Rush		per sample	$68.20	$0.00
G1. 8 RCRA Metals		per sample	$63.40	$0.00
H1. TPH (9070)		per sample	$41.00	$0.00
II. pH		per sample	$5.20	$0.00
J1. BOD		per sample	$20.00	$0.00
PP. Ethanol		per sample	$14.80	$0.00
11. **Analyses-Soil**				
Q1. BTEX + Naphth.		per sample	$64.00	$0.00
R1. PAH's		per sample	$64.04	$0.00
S1. 8 RCRA Metals		per sample	$56.40	$0.00
U1. TPH-DRO (3550C/8015C)		per sample	$40.00	$0.00
V1. TPH- GRO (5030B/8015C)		per sample	$35.96	$0.00
W1. Grain size/hydrometer		per sample	$104.00	$0.00
X1. Total Organic Carbon		per sample	$30.60	$0.00
11. **Analyses-Air**				
Y1. BTEX + Naphthalene		per sample	$216.00	$0.00
11. **Analyses-Free Phase Product**				
Z1. Hydrocarbon Fuel Identification		per sample	$357.00	$0.00
12. **Aquifer Characterization**				
A1. Pumping Test*		per hour	$23.00	$0.00
B1. Slug Test*		per test	$191.00	$0.00
C1. Fractured Rock		per test	$100.00	$0.00
13. A1. **Free Product Recovery Rate Test***		each	$38.00	$0.00
14. **Fate/Transport Modeling**				
A1. Mathematical Model		each	$100.00	$0.00
B1. Computer Model		each	$100.00	$0.00
15. **Risk Evaluation**				
A. Tier I Risk Evaluation		each	$300.00	$0.00
B1. Tier II Risk Evaluation		each	$100.00	$0.00
16. A1. **Subsequent Survey***		each	$260.00	$0.00
17. **Disposal (gallons or tons)***				
AA. Wastewater	500	gallon	$0.56	$280.00
BB. Free Product		gallon	$0.50	$0.00
C1. Soil Treatment/Disposal		ton	$60.00	$0.00
D1. Drilling fluids		gallon	$0.42	$0.00
18. **Miscellaneous (attach receipts)**				
		each	$0.00	$0.00
		each	$0.00	$0.00
		each	$0.00	$0.00
20. **Tier I Assessment (Use DHEC 3665 form)**		standard		$0.00
21. **IGWA (Use DHEC 3666 form)**		standard		$0.00
22. **Corrective Action (Use DHEC 3667 form)**		PFP Bid		$0.00

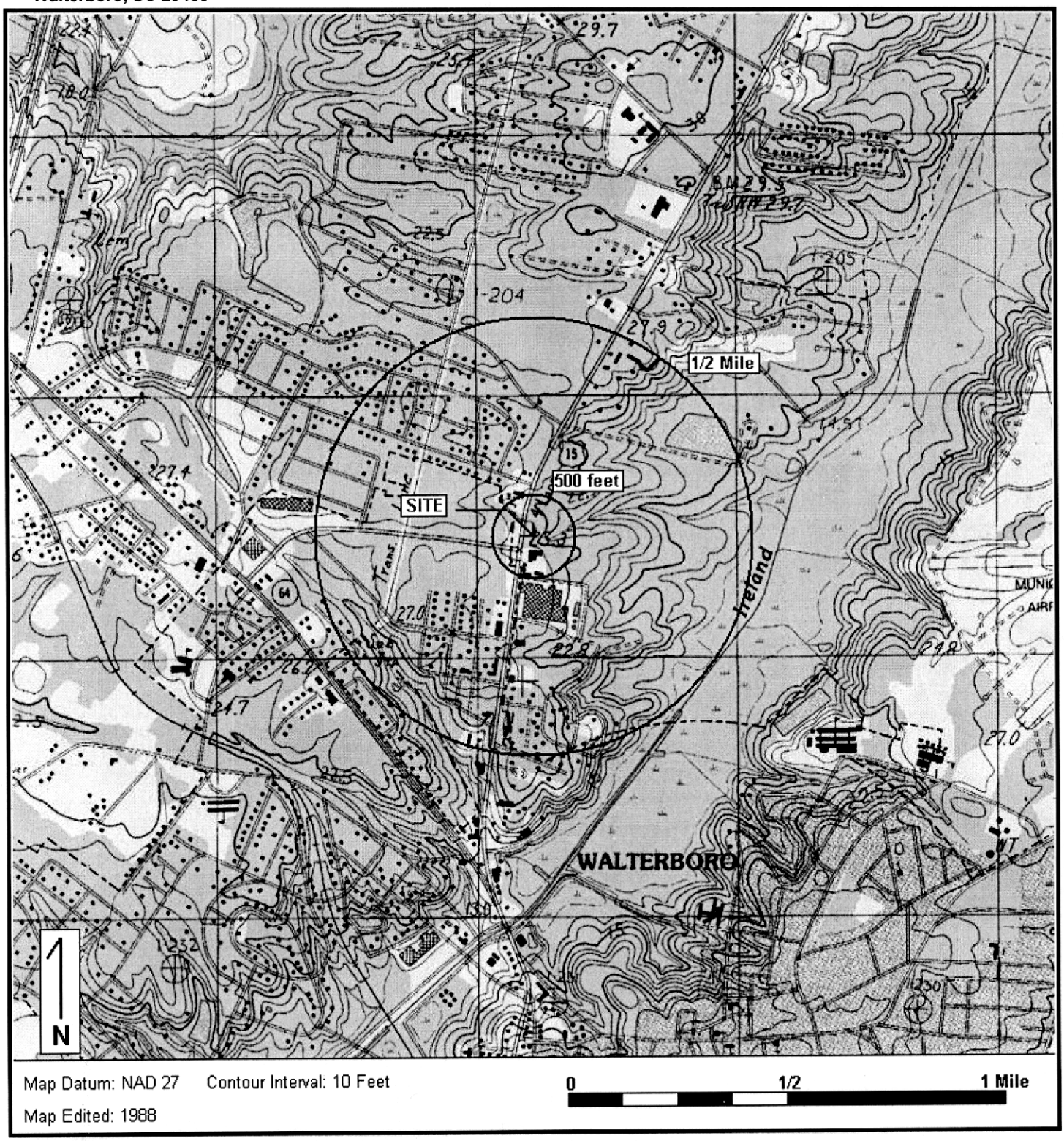
23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A1. 8-hour Event*		each	$1,375.00		$0.00
AA. 24-hour Event*		each	$3,825.00		$0.00
A3. 48-hour Event*		each	$6,265.00		$0.00
A4. 96-hour Event*		each	$12,567.50		$0.00
C1. Off-gas Treatment 8 hour		per event	$122.50		$0.00
C2. Off-gas Treatment 24 hour		per event	$241.50		$0.00
C3. Off-gas Treatment 48 hour		per event	$327.00		$0.00
C4. Off-gas Treatment 96 hour		per event	$780.00		$0.00
D. Site Reconnaissance		each	$203.25		$0.00
E1. Additional Hook-ups		each	$25.75		$0.00
F1. Effluent Disposal		gallon	$0.44		$0.00
G. AFVR Mobilization/Demobilization		each	$391.50		$0.00
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A1. New GAC System Installation*		each	$1,900.00		$0.00
BB. Refurbished GAC Sys. Install*		each	$900.00		$0.00
C1. Filter replacement/removal*		each	$350.00		$0.00
DD. GAC System removal, cleaning, & refurbishment*		each	$275.00		$0.00
E1. GAC System housing*		each	$250.00		$0.00
F. In-line particulate filter		each	$150.00		$0.00
G1. Additional piping & fittings		foot	$1.50		$0.00
25. **Well Repair**					
A1. Additional Copies of the Report Delivered		each	$50.00		$0.00
B1. Repair 2x2 MW pad*		each	$50.00		$0.00
C1. Repair 4x4 MW pad*		each	$88.00		$0.00
D1. Repair well vault*		each	$118.00		$0.00
F1. Replace well cover bolts		each	$2.60		$0.00
G. Replace locking well cap & lock		each	$15.00		$0.00
H1. Replace/Repair stick-up*		each	$134.00		$0.00
I1. Convert Flush-mount to Stick-up*		each	$150.00		$0.00
J1. Convert Stick-up to Flush-mount*		each	$130.00		$0.00
K1. Replace missing/illegible well ID plate		each	$12.00		$0.00
Report Prep & Project Management	12%	percent	$8,585.00		$1,030.20
TOTAL					$9,615.20

*The appropriate mobilization cost can be added to complete these tasks, as necessary

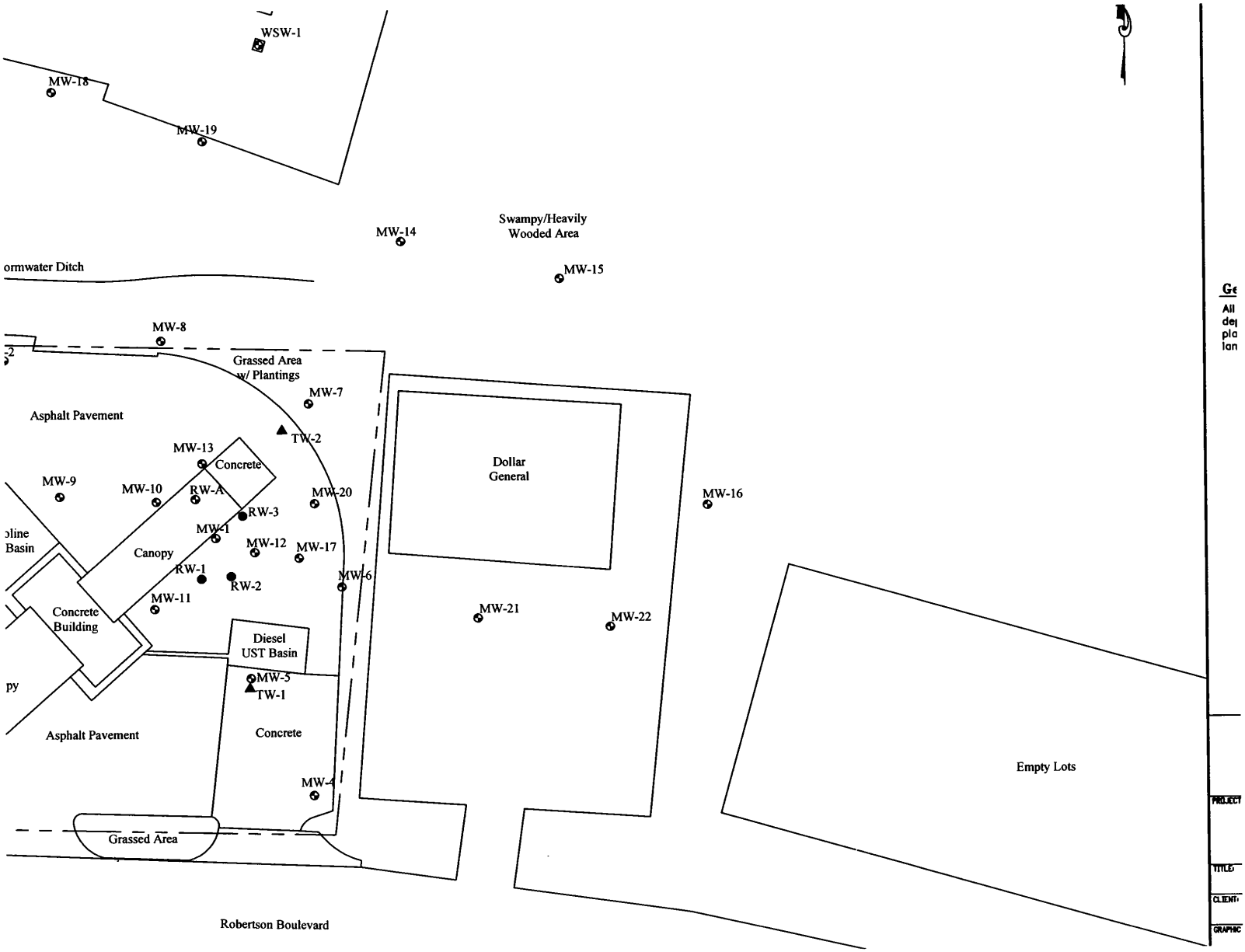
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins


WSW-1
MW-18
MW-19
Swampy/Heavily
Wooded Area
MW-14
ormwater Ditch
MW-15
MW-8
Grassed Area
w/ Plantings
MW-7
Asphalt Pavement
TW-2
MW-13
Concrete
MW-9
MW-10
RW-A
MW-20
RW-3
MW-1
MW-12
MW-17
Canopy
RW-1
RW-2
MW-6
MW-11
Concrete
Building
Diesel
UST Basin
MW-5
TW-1
Asphalt Pavement
Concrete
MW-4
Grassed Area
Dollar
General
MW-16
MW-21
MW-22
Empty Lots
Robertson Boulevard

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

LAWTON R. SMITH
ROHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

DEC 11 2014

Re: **Groundwater Sampling Directive**
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC 29488
UST Permit# 02567; CA# 49417
Release Reported April 14, 2011
Site Specific Work Plan received December 10, 2014
Walterboro County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan submitted on your behalf by Environmental Compliance Services. The next appropriate scope of work at the site is a comprehensive groundwater sampling event. All work should be conducted in accordance with the UST Quality Assurance Program Plan (QAPP) Revision 2.0, and must be conducted in compliance with all applicable regulations. A copy of the Agency QAPP Revision 2.0, for the UST Management Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance.

Groundwater sampling activities at the site should begin immediately upon receipt of this letter. Cost agreement # 49417 has been approved for the amount shown on the enclosed cost agreement form for sampling all monitoring wells associated with the referenced release. Groundwater samples should be collected and analyzed for BTEX, naphthalene, MtBE, 8 oxygenates, 1,2 DCA and EDB. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, field and trip blanks.

In accordance with the QAPP, a weekly status report of the project should be provided via e-mail. If any quality assurance problems arise, you must contact me within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

The Monitoring Report, contractor checklist (QAPP Appendix K), and invoice are due within 60 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Environmental Compliance Services can submit an invoice for direct payment from State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services and report preparation must be satisfied. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Agency for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual chemical of concern (CoC) in excess of Risk-Based Screening Levels (RBSLs), the data cannot be used. In those cases, the Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Management Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. The transport and disposal must be conducted in accordance with the QAPP. If the CoC concentrations based on laboratory analysis are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit # 02567. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0606, by fax at (803) 898-0673, or by e-mail at bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement

cc: Environmental Compliance Services, PO Box 3528, Fort Mill, SC 29708 (with enc.)
Technical File (with enc.)

Approved Cost Agreement 49417

Facility 02567 RHODESWAY NORTH
BRYANTJC
PO Number

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1 0000	150 00	150.00
04 MOB/DEMOB						
		B1	PERSONNEL	2 0000	423.00	846 00
10 SAMPLE COLLECTION						
		A1	GROUNDWATER (PURGE)	27 0000	60.00	1,620 00
		C1	WATER SUPPLY	1 0000	22 00	22.00
		D1	GROUNDWATER NO PURGE/DUPLICATE	4.0000	28 00	112.00
		H1	FIELD BLANK	2 0000	24 60	49 20
11 ANALYSES	GW GROUNDWATER					
		A2	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	36 0000	122 00	4,392.00
		F1	EDB BY 8011	34 0000	45 20	1,536 80
17 DISPOSAL						
		AA	WASTEWATER	500 0000	0.56	280.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0 1200	9,008.00	1,080.96
				Total Amount		10,088 96

Document Receipt Information

☐ Hard Copy ☒ CD ☐ Email

Date Received 1-2-15

Permit Number 02567

Project Manager John Bryant

Name of Contractor ECS

UST Certification Number

Docket Number 25 tech

Scanned

GW Sampling

WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

GROUNDWATER MONITORING REPORT
RHODESWAY NORTH
1400 JEFFRIES HIGHWAY
WALTERBORO, SOUTH CAROLINA
UST PERMIT #02567

Prepared for:
Rhodes Oil Company
Post Office Box 1545
Walterboro, South Carolina

ECS Project No.14-215778
December 30, 2014

Prepared by:
ECS, Inc.
13504 South Point Blvd, Unit F
Charlotte, NC 28273
tel 704.583.2711 fax 704.583.2744
www.ecsconsult.com

GROUNDWATER SAMPLING REPORT

RHODESWAY NORTH
1400 JEFFRIES HIGHWAY
WALTERBORO, SOUTH CAROLINA

UST PERMIT NO. 02567
ECS PROJECT NO. 14-215788

Prepared For:
Rhodes Oil Company
Post Office Box 1545
Walterboro, South Carolina 29488

Prepared By:

Environmental Compliance Services, Inc.
Post Office Box 3528
Fort Mill, South Carolina 29708-3528

December 30, 2014

Noelle France
Project Manager

David R. Mazorra, PE
SC Licensed Professional Engineer #31409
Date 12/30/14

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER No. 31409 DAVID R. MAZORRA

TABLE OF CONTENTS

Page

LIST OF TABLES iii

LIST OF FIGURES iii

LIST OF APPENDICES iii

1.0 INTRODUCTION 1

1.1 SITE INFORMATION 1
1.2 UST OWNER/OPERATOR 1
1.3 PROPERTY OWNER INFORMATION 1
1.4 DHEC CERTIFIED UST SITE REHABILITATION CONTRACTOR INFORMATION 1
1.5 CERTIFIED LABORATORY INFORMATION 1
1.6 SITE HISTORY 2
1.7 REGIONAL GEOLOGY/HYDROGEOLOGY 2

2.0 RECEPTOR SURVEY & SITE DATA 4

2.1 RECEPTOR SURVEY 4
2.2 SITE GEOLOGY/HYDROGEOLOGY 4

3.0 ASSESSMENT INFORMATION 5

3.1 SOIL ASSESSMENT 5
3.2 GROUNDWATER FIELD SCREENING 5
3.3 MONITORING WELL INFORMATION 5
3.4 GROUNDWATER ASSESSMENT 5
3.4.1 Water Level Measurements 5
3.4.2 Water Sampling and Analyses 6
3.4.3 Groundwater Analytical Data 6
3.4.4 Aquifer Characterization 7
3.5 INVESTIGATIVE DERIVED WASTE 7

4.0 CONCLUSIONS AND RECOMMENDATIONS 8

4.1 SUMMARY 8
4.2 CONCLUSIONS 8
4.3 RECOMMENDATIONS 8

5.0 LIMITATIONS 9

5.1 DATA VERIFICATION 9

TABLE OF CONTENTS
(Continued)

TABLES

Table 1: Soil Analytical Data (Not Required)
Table 2: Groundwater Elevation Data
Table 4: Groundwater Analytical Data
Table 5: Aquifer Characteristics (Not Required)
Table 6: Site Conceptual Model (Not Required)

FIGURES

Figure 1: Site Locus
Figure 2: Site Map
Figure 3: Soil Quality CoC Map (Not Required)
Figure 4: Groundwater Quality Map
Figure 5: Groundwater Elevation Map
Figure 6: Cross-Section (Not Required)
Figure 7: Predicted Migration (Not Required)

APPENDICES

Appendix A: Site Survey (Not Required)
Appendix B: Sampling Logs, Laboratory Report, Chain of Custody Record and QA/QC Evaluation
Appendix C: Tax Map Information (Not Required)
Appendix D: Boring Logs (Not Required)
Appendix E: Well Construction Records (Not Required)
Appendix F: Aquifer Evaluation Data (Not Required)
Appendix G: Disposal Manifest (to be submitted when available)
Appendix H: Local Zoning Regulations (Not Required)
Appendix I: Fate & Transport Modeling Data (Not Required)
Appendix J: Access Agreements (Not Required)
Appendix K: Data Verification Checklist

1.0 INTRODUCTION

This report presents the results of the groundwater sampling activities conducted at the Rhodesway North site on December 15, and 16, 2014. These activities were conducted in accordance with the Underground Storage Tank (UST) Quality Assurance Program Plan (QAPP) and Cost Agreement Number 49471 as approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in correspondence dated December 10, 2014.

1.1 SITE INFORMATION

UST Facility Name:	Rhodesway North
UST Permit Number:	02567
Facility Address:	1400 Jeffries Highway Walterboro, South Carolina
Telephone Number:	(843) 549-1739

1.2 UST OWNER/OPERATOR

Name:	Rhodes Oil Company
Address:	Post Office Box 1545 Walterboro, South Carolina
Telephone Number:	(843) 549-5521

1.3 PROPERTY OWNER INFORMATION

Name:	Rhodes Development of Walterboro
Address:	Post Office Box 1545 Walterboro, South Carolina
Parcel Identification (ID):	147-15-00-057.000
Telephone Number:	(843) 549-5521

1.4 DHEC CERTIFIED UST SITE REHABILITATION CONTRACTOR INFORMATION

Name:	Environmental Compliance Services, Inc.
Address:	Post Office Box 3528 Fort Mill, South Carolina 29708
Telephone Number:	(800) 627-0493
Certification Number:	358

1.5 CERTIFIED LABORATORY INFORMATION

Company Name:	Pace Analytical Services, Inc.
Address:	9800 Kincey Avenue, Suite 100 Huntersville, North Carolina 28078
SC Certification:	99006001

1.6 SITE HISTORY

UST Permit:	02567
Site Name:	Rhodesway North
Date Release Reported to SCDHEC:	April 14, 2011
Estimated Quantity of Product Released:	Not reported
Cause of Release:	UST system
SC RBCA Classification Code:	2BA

UST Permit 02567

UST #	Size	Product	Date Installed	Status	Date Closed
1	12,000	Super Gasoline	5/19/1987	In Use	NA
2	12,000	Plus Gasoline	5/19/1987	In Use	NA
3	12,000	Regular Gasoline	5/19/1987	In Use	NA
4	12,000	Diesel	5/19/1987	In Use	NA
5	12,000	Diesel	5/19/1987	In Use	NA

The SCDHEC UST Database indicates three additional releases reported at the site. A release was reported at the site on June 21, 2007 with a No Further Action (NFA) determination issued on June 25, 2007. A release was reported November 13, 2009 with an NFA determination dated November 19, 2009. A release was reported at the site on February 19, 2013 which had an NFA determination dated February 26, 2013.

1.7 REGIONAL GEOLOGY/HYDROGEOLOGY

The site is located in the Coastal Plain Physiographic Province of South Carolina. The surficial deposits in the vicinity of the site consisted of Pleistocene to Holocene age red, gray and white poorly sorted clayey quartzose and arkosic sand and gravel. The surficial deposits were underlain by an unnamed unit of Pliocene (?) age consisting of tan, red and gray silt, sand and gravel associated with buff to brown silty clay. This unit was underlain by the buff to yellow, arenaceous, fossiliferous clay or marl interbedded with white to gray quartzose sand with shell and shell hash of the upper Miocene Duplin Formation. The middle Miocene Hawthorn Formation, consisting of tan, reddish-purple and gray compact sandy clay with some included gravel and limonite nodules lies beneath the Duplin Formation. The Oligocene age deposits underlying the Hawthorn Formation were reported to consist of the olive-green foraminiferal marl with lenses of quartzose sand of the Cooper Marl.

Beneath the Cooper Marl are a series of upper to middle Eocene units collectively called the Orangeburg group. These units consist of tan, red, brown, yellow and buff sands interbedded with red, tan, green, ochre and purple clays and some white calcareous clays. The most permeable beds in the group are the quartzose sands of the Congaree and McBean Formations. The Santee Limestone, a white to gray, highly fossiliferous, cherty, glauconitic and dolomitic limestone is also a member of the group. The lower Eocene unit is the Black Mingo Formation, which is underlain by an unnamed unit of Paleocene (Midway) age. These units consist of fine light gray sands and sugary sandstone or bioclastic limestone interbedded with gray shale overlying dark gray to black lignitic shale.

Below the Black Mingo Formation is a series of units collectively called the Cretaceous aquifers. These units, in descending order, are the Peedee Formation, the Black Creek Formation, the Ellenton Formation, and the Tuscaloosa Formation, and consist primarily of medium to course grained glauconitic, phosphatic,

quartzitic to arkosic sand and gravel interbedded with sandy marl, limestone or lignitic or kaolinitic clay. The Cretaceous aquifers range in thickness from 500 to over 1,000 feet, and lie unconformably over pre-Cretaceous fanglomerates and conglomerates and crystalline bedrock.

Most wells in the Upper Coastal Plan have been developed in the quartzose sands of the Orangeburg Group, and most of these, except for shallow dug wells, were developed in the McBean and underlying Congaree Formations. Some have also been developed in the Black Mingo Formation, or in the unnamed unit of Paleocene age. Most wells in the Lower Coastal Plain have been developed in the Santee Limestone or its interbedded sands of middle Eocene age, in the underlying sands and limestone of the Black Mingo Formation, and the fine to medium sands of the upper Cretaceous Peedee and Black Creek Formations.

2.0 RECEPTOR SURVEY & SITE DATA

2.1 RECEPTOR SURVEY

The site is located at the intersection of North Jefferies Highway (US Highway 15) and Robertson Boulevard in the city of Walterboro, South Carolina. The area surrounding the site is primarily developed with commercial properties. The surrounding properties include Walker Accounting & Tax Services to the north; Dollar General to the east; Walgreen's to the south across Robertson Boulevard; South Carolina Bank & Trust across the intersection; and, CVS to the west across N. Jefferies Hwy. The topography of the area around the site is generally characterized by gently rolling features. A site location map is included as **Figure 1**.

An active water supply well was reported approximately 300 feet north of the USTs in the Tier II assessment dated May 2013. Wetlands have been mapped approximately 275 feet northeast of the site.

Water, fiber optic and sewer lines are present on the northwest corner of the property. These are assumed to be located at approximately five feet below ground surface and could act as preferential pathways for fugitive vapors.

2.2 SITE GEOLOGY/HYDROGEOLOGY

The surface material at the site is primarily asphalt and smaller areas of concrete at the canopy and store building. The asphalt/concrete and gravel base material was approximately 1-foot in thickness. Native soils observed below the thin layer of fill material at the site were generally characterized as tan/brown/clayey sand and sandy clay to depths ranging between 5 feet and 10 feet below ground surface (bgs). Below the sandy clay, the site was underlain by sand to the termination depths of 12 to 14 feet bgs.

Two soil samples collected from the screened intervals of 02567-MW7 and 02567-TW2 and submitted for grain size and hydrometer analyses. The soil from 02567-MW7 was collected at a depth of 10 feet and the soil from 02567-TW2 was collected at 35 feet below grade. Results for the shallow monitoring well 02567-MW7 reported the presence of 0.3% gravel, 82.8% sand, 4.8% silt, and 12.1% clay. Results for the deep monitoring well 02567-TW2 reported the presence of 0.0% gravel, 95.1% sand, 1.3% silt and 3.6% clay. Based on this information the subsurface can be classified as sandy soil.

3.0 ASSESSMENT INFORMATION

The SCDHEC directive for this assessment included a groundwater sampling event from site monitoring wells.

3.1 SOIL ASSESSMENT

Soil assessment was not required for the scope of work outlined in the December 10, 2014 directive.

3.2 GROUNDWATER FIELD SCREENING

Groundwater field screening was not required for the scope of work outlined in the December 10, 2014 directive.

3.3 MONITORING WELL INFORMATION

Monitoring well installation was not required for the scope of work outlined in the December 10, 2014 directive.

3.4 GROUNDWATER ASSESSMENT

3.4.1 Water Level Measurements

Water levels were gauged in 27 monitoring wells (02567-MW1 through 02567-MW22, 02567-RW1 through RW3 and 02567-TW1 and 02567-TW2) on December 15 and 16, 2014. Free product was measured in groundwater monitoring wells 02567-MW1, 02567-MW12, 02567-MW13, 02567-MW17, 02567-RW1, 02567-RW2 and 02567-RW3. Where free product was observed the groundwater elevation was corrected using an assumed free product density of 0.75 g/mL.

The groundwater elevations measured on December 15 and 16, 2014 in the shallow monitoring wells, relative to NAVD 88 ranged from 75.48 feet (02567-MW3) to 63.53 feet (02567-MW16).

Based on these data, the groundwater flow direction was generally toward the northeast. The hydraulic gradient was estimated based on the change in head hydraulic head per unit distance, calculated by using the formula $= \frac{\quad}{\quad}$, referenced from the "EPA On-line Tools for Site Assessment Calculation" website <http://www.epa.gov/athens/learn2model/part-two/onsite/gradient.htm>. In this calculation, i is the gradient, h is the hydraulic head at the up gradient monitoring well (h_1) and down gradient monitoring well (h_2), and d is the distance between the down gradient monitoring well and the up gradient monitoring well. The horizontal hydraulic gradient between 02567-MW3 and 02567-MW15 was calculated to be 0.0215 feet per foot (ft/ft).

The groundwater elevations in adjacent (paired) monitoring wells were used to calculate the vertical gradient. The vertical gradient was calculated using the formula $dh/dl = (h_2 - h_1) / (z_2-z_1)$, referenced from the "EPA On-line Tools for Site Assessment Calculation" site <http://www.epa.gov/athens/learn2model/part-two/onsite/vgradient02.html>. In this calculation, the vertical hydraulic gradient is the difference in head divided by the vertical distance of mid-points of the screened intervals between wells. The vertical hydraulic gradient between monitoring well pair 02567-MW5/02567-TW1 resulted in 0.02850 ft/ft in the downward

direction. The vertical hydraulic gradient between monitoring well pair 02567-MW7/02567-TW2 was 0.01606 ft/ft in the upward direction.

Groundwater elevation data is presented in **Table 2**. A groundwater elevation map for site monitoring wells is included as **Figure 5**.

3.4.2 Water Sampling and Analyses

Water samples were obtained from monitoring wells 02567-MW2 through 02567-MW11, 02567-MW14, 02567-MW15, 02567-MW16, 02567-MW18 through 02567-MW22, 02567-TW1, and 02567-TW2 on December 15 and 16, 2014. Two surface water samples, 02567-SW1 and 02567-SW2, and one water supply well sample, 02567-WSW1, were also collected for analysis.

Each monitoring well was purged and sampled using a new, disposable polyethylene bailer while wearing new, disposable nitrile gloves. Purging was accomplished by removing three to five well volumes and in-field groundwater quality parameters were stabilized or until the well was bailed dry and allowed to recharge.

Groundwater samples were containerized in laboratory-prepared glass bottles, packed on ice, and transported to Pace Analytical Services, Inc. (Huntersville, NC), a South Carolina certified laboratory. Standard chain-of-custody procedures were maintained, as documented in **Appendix B**.

A duplicate sample identified as 02567-Duplicate 1 was collected from 02567-MW7 within 5 minutes of 02567-MW7 groundwater sample collection. A duplicate sample identified as 02567-Duplicate 2 was collected from 02567-MW9 within 5 minutes of 02567-MW9 groundwater sample collection.

Duplicate samples were assigned a unique identification name with no time listed on the chain of custody to avoid potential laboratory analytical bias. The duplicate sample was identified in the field book. Two field blanks was also collected, during water sampling activities for quality assurance and quality control. A set of trip blanks, were included for quality assurance and quality control.

Twenty-eight water samples (20 wells, 2 surface water samples, 1 water supply well sample, 2 duplicates, 2 field blanks, and 1 trip blank) were analyzed for benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX compounds), naphthalene, 1,2-dichloroethane (1,2-DCA), methyl tertiary butyl ether (MTBE), tertiary amyl alcohol (TAA), tertiary amyl methyl ether (TAME), tertiary butyl alcohol (TBA), tertiary butyl formate (TBF), diisopropyl ether (DIPE), ethanol, ethyl tertiary butyl ether (ETBE), and 3,3-dimethyl-1-butanol by Environmental Protection Agency (EPA) Method 8260. All samples with the exception of the trip blank were analyzed for the presence of ethylene dibromide (EDB) by EPA Method 8011.

3.4.3 Groundwater Analytical Data

Groundwater samples collected from monitoring wells 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW8, 02567-MW9, 02567-MW10, 02567-MW11, and 02567-MW20 were reported with one or more dissolved petroleum hydrocarbon concentration above the Risk Based Screening Level (RBSL) as defined in Appendix B of SCDHEC, Bureau of Land and Waste Management, UST Program, May, 15, 2001, *South Carolina Risk Based Corrective Action for Petroleum Releases* or oxygenate concentrations above the Action Limits (ALs) as defined in SCDHEC Bureau of Land and Waste Management, UST Program, October 22, 2008, *Certification of the Oxygenate Compounds*. Compounds reported above their respective RBSL/AL included benzene,

toluene, ethylbenzene, total xylenes, MTBE, naphthalene, Tert-Amyl Alcohol and Tert-Butyl Alcohol.

Historical groundwater analytical data fare presented in **Table 3**. A groundwater quality map based on the December 2014 data is included as **Figure 4**. Groundwater Sampling Field Data Sheets have been included in **Appendix B**. The laboratory report for groundwater samples collected during this assessment are included in **Appendix B**. A quality assurance and quality control evaluation is also included in **Appendix B**.

3.4.4 Aquifer Characterization

Aquifer characteristics determinations were not required for the scope of work outlined in the December 10, 2014 directive.

3.5 INVESTIGATIVE DERIVED WASTE

Investigative derived waste (IDW) generated during these activities was placed in 55-gallon drums for disposal by a licensed facility. A copy of the disposal manifest for water from decontamination of equipment and purge water has not been received by this office at the time of report preparation. A copy of the manifest will be forwarded to the SCDHEC upon our receipt.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 SUMMARY

- Water levels were gauged in 27 monitoring wells (02567-MW1 through 02567-MW22, 02567-RW1 through RW3, 02567-TW1, and 02567-TW2) on December 15 and 16, 2014.
- Seven groundwater monitoring wells, (02567-MW1, 02567-MW12, 02567-MW13, 02567-MW17, 02567-RW1, 02567-RW2, and 02567-RW3) were found to contain free product during the December 2014 groundwater gauging event.
- Water samples were obtained from monitoring wells 02567-MW2 through 02567-MW11, 02567-MW14, 02567-MW15, 02567-MW16, 02567-MW18 through 02567-MW22, 02567-TW1, and 02567-TW2 on December 15 and 16, 2014. Two surface water samples 02567-SW1 and 02567-SW2, and one water supply well sample, 02567-WSW1, were also collected for analysis.
- Groundwater samples collected from monitoring wells 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW8, 02567-MW9, 02567-MW10, 02567-MW11, and 02567-MW20 were reported with one or more dissolved petroleum hydrocarbon concentration above their respective RBSLs or ALs.
- Groundwater flow direction during the December 2014 groundwater sampling event was generally toward the northeast.

4.2 CONCLUSIONS

- Based on the presence of petroleum constituents in 02567-MW9 and 02567-MW11 which are located in positions upgradient of the diesel UST and dispenser islands, and downgradient of the gasoline UST and dispensers, contamination in these wells may be the result of a release from the gasoline UST system.
- Based on the presence of free product in the recovery wells, 02567-RW1, 02567-RW2 and 02567-RW3and 02567-MW13, where it was not present during the previous sampling event, the free product plume is mobile and migrating.
- Based on the groundwater flow direction, and the presence of petroleum hydrocarbon constituents in 02567-MW9 the horizontal extent of dissolved petroleum hydrocarbons has not been defined on the western side of the site.

4.3 RECOMMENDATIONS

- Installation of a shallow groundwater monitoring well in the grassed area north of 02567-MW3 to define the horizontal extent of groundwater contamination.
- Installation of telescoping wells are recommended in the vicinity of 02567-MW9 and 02567-MW11 to evaluate the vertical extent of groundwater contamination which may be the result of a release from the gasoline UST system.
- Installation of a telescoping is recommended in the vicinity of 02567-MW6 which has the highest concentration of constituents downgradient of the existing free product plume.
- Additional groundwater monitoring should be performed to continue to monitor the dissolved hydrocarbons in groundwater.
- ECS recommends performing Aggressive Fluid Vapor Recovery (AFVRs) events at this site to address the presence of free product in seven monitoring wells, and reduce the concentration of dissolved petroleum constituents in the groundwater at the site.

5.0 LIMITATIONS

This report has been prepared for the exclusive use of Rhodes Oil Company for specific application to the referenced site in Colleton County, South Carolina. The assessment was conducted based on the scope of work and level of effort desired by the SCDHEC and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of South Carolina, available information, and our professional judgment. No other warranty is expressed or implied.

The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. Additionally, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data.

Certain data contained in this report were not obtained under the supervision of ECS. Although the accuracy of these data cannot be verified, for the purposes of this report, ECS assumes that they are correct.

5.1 DATA VERIFICATION

The Project Verifier/Quality Assurance Manager has reviewed this report and provided any additional comments if applicable in **Appendix K**.

TABLES

TABLE 2
GROUNDWATER ELEVATION DATA
RHODESWAY NORTH

Well	Date	Top of Casing Elevation (ft.)	Depth to Water (ft.)	Depth to Product (ft.)	Free Product Thickness (ft.)*	Ground-water Elevation (ft.)	Well Depth (ft)	Screened Interval (ft.)
02567-MW1	4/17/2012	78.57	5.50	---	---	73.07	13.50	3-13
	4/16/2013		4.91	4.55	0.36	73.93		
	12/15/2014		5.41	4.96	0.45	73.50		
02567-MW2	4/17/2012	78.77	5.11	---	---	73.66	13.26	3-13
	4/16/2013		3.83		---	74.94		
	12/15/2014		4.40			74.37		
02567-MW3	4/17/2012	80.14	5.85	---	---	74.29	13.98	3-13
	4/16/2013		4.04	---	---	76.10		
	12/15/2014		4.66			75.48		
02567-MW4	4/16/2013	77.22	2.79	---	---	74.43	12.36	3-13
	12/15/2014		3.45			73.77		
02567-MW5	4/16/2013	78.08	3.75	---	---	74.33	12.50	3-13
	12/16/2014		4.33			73.75		
02567-MW6	4/16/2013	77.83	4.08	---	---	73.75	12.72	3-13
	12/15/2014		4.41			73.42		
02567-MW7	4/16/2013	76.94	3.67	---	---	73.27	12.70	3-13
	12/15/2014		4.14			72.80		
02567-MW8	4/16/2013	77.75	3.65	---	---	74.10	12.97	3-13
	12/15/2014		4.26			73.49		
02567-MW9	4/16/2013	79.04	4.05	---	---	74.99	12.55	3-13
	12/16/2014		4.57			74.47		
02567-MW10	4/16/2013	78.62	4.29	---	---	74.33	12.67	3-13
	12/16/2014		4.81			73.81		
02567-MW11	4/16/2013	79.01	4.40	---	---	74.61	12.16	3-13
	12/16/2014		5.04			73.97		
02567-MW12	4/16/2013	78.19	5.06	4.19	0.87	74.60	12.65	3-13
	12/15/2014		5.06	4.67	0.39	74.24		
02567-MW13	4/16/2013	78.13	4.19	---	---	73.94	12.62	3-13
	12/16/2014		4.91	4.60	0.31	74.33		
02567-MW14	4/16/2013	72.00	3.25	---	---	68.75	7.56	3-8
	12/16/2014		3.15			68.85		
02567-MW15	4/16/2013	70.00	3.68	---	---	66.32	11.39	3-8
	12/16/2014		3.64			66.36		
02567-MW16	4/16/2013	67.00	3.80	---	---	63.20	10.12	3-8
	12/16/2014		3.47	---	---	63.53		
02567-MW17	4/16/2013	77.80	5.09	3.88	1.21	73.62	13.00	3-13
	12/15/2014		5.85	4.20	1.65	73.19		
02567-MW18	4/30/2013	76.32	2.46	---	---	73.86	12.30	3-13
	12/15/2014		2.20	---	---	74.12		
02567-MW19	4/30/2013	74.80	1.28	---	---	73.52	12.12	3-13
	12/15/2014		1.52			73.28		
02567-MW20	4/30/2013	77.46	3.99	---	---	73.47	13.27	3-13
	12/15/2014		4.35			73.11		
02567-MW21	4/30/2013	75.75	2.77	---	---	72.98	12.59	3-13
	12/15/2014		3.39			72.36		
02567-MW22	4/30/2013	75.67	4.70	---	---	70.97	13.18	3-13
	12/15/2014		5.07			70.60		
02567-TW1	4/16/2013	78.41	4.44	---	---	73.97	35.42	30-35
	12/16/2014		5.42			72.99		
02567-TW2	4/16/2013	77.17	3.20	---	---	73.97	36.85	30-35
	12/15/2014		3.94			73.23		
02567-RW1	4/16/2013	78.77	4.49	---	---	74.28	12.94	3-13
	12/15/2014		5.11	4.99	0.12	73.75		
02567-RW2	4/16/2013	78.23	4.13	---	---	74.10	13.23	3-13
	12/15/2014		4.90	4.55	0.35	74.37		
02567-RW3	4/16/2013	78.10	4.18	---	---	73.92	13.20	3-13
	12/15/2014		4.78	4.56	0.22	74.40		

Notes:
Elevations relative datum NAVD 88.
MW-14, MW-15, MW-16 are stick up wells in the Swampy/Wooded Area.
* Groundwater elevation corrected for the presence of free product when present using an assumed free product density of 0.75 g/mL

TABLE 4
GROUNDWATER ANALYTICAL DATA
RHODESWAY NORTH

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Tertiary Amyl Methyl Ether (µg/L)	Ethyl tert-Butyl Ether (µg/L)	3,3-Dimethyl-1-butanol (µg/L)	Di-isopropyl Ether (µg/L)	Ethanol (µg/L)	Tertiary Amyl Alcohol (µg/L)	Tertiary Butyl Alcohol (µg/L)	Tertiary Butyl Formate (µg/L)
RBSLs/ALs		**5**	**1,000**	**700**	**10,000**	**40**	**25**	**5**	**0.05**	**15**	**128**	**47**	**--**	**150**	**10,000**	**240**	**1,400**	**--**
02567-MW1	4/17/2012	**5,110**	**6520**	**873 J**	**3940 J**	**43200**	<2,000[4]	<2,000	<0.020	**81**	<4,000	<4,000	<40,000	<2,000	<80,000	**32100 J**	<40,000	<20,000
	4/17/2013	**Free Product**																
	12/15/2014	**Free Product**																
02567-MW2	4/17/2012	3.7 J	5.0 J	<5.0	<15	4.0 J	<5.0	<5.0	<0.021	**158**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	4/17/2013	**27.5**	<5.0	<5.0	<10.5	17.9	<5.0	<5.0	<0.020	<5.0	<10.0	<10.0	<100	<5.0	<200	131	<100	<50.0
	12/15/2014	3.2 J	<5.0	<5.0	<10.0	3.6 J	<5.0	<5.0	<0.023	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW3	4/17/2012	2.3 J	14.7	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**241**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW4	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**87.5**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW5	4/17/2013	**16.6**	23.6	37.3	175.6	<5.0	15.0	<5.0	<0.021	**533**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/16/2014	**68.9**	54.2	93.9	522	6.7	**40.8**	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW6	4/17/2013	**6110**	**4410**	**3080**	**7290**	**2140**	**716**	<5.0	<0.020	**23.7**	<100	<100	<1,000	<50.0	<2,000	<1,000	**1760**	<500
	12/15/2014	**4450**	**1190**	**2260**	4070	**633**	**601**	<250	<0.020	NR	<500	<500	<5000	<250	<10000	<5000	**2900 J**	<2500
02567-MW7	4/17/2013	**1010**	<50.0	<50.0	<150	**1,110**	<50.0	<50.0	<0.020	**74.2**	<100	<100	<1,000	<50.0	<2,000	**2270**	**6060**	<500
	12/15/2014	**757**	<50.0	45.6 J	182	**319**	**39.6 J**	<50.0	<0.021	NR	<100	<100	<1000	<50.0	<2000	**1700**	**6820**	<500
02567-MW8	4/17/2013	**122**	27.5	17.2	32.8	**185**	20.3	<5.0	<0.020	**114**	<10.0	<10.0	<100	<5.0	<200	**370**	816	<50.0
	12/15/2014	<10.0	<10.0	<10.0	<20.0	**156**	<10.0	<10.0	<0.020	NR	<20.0	<20.0	<200	<10.0	<400	203	353	<100
02567-MW9	4/17/2013	**13600**	**16300**	**1600**	6860	**70500**	**617**	<50.0	<0.020	**88**	**216**	<100	<1,000	<50.0	<2,000	**39000**	**12100**	<500
	12/16/2014	**22100**	**32000**	**3450**	**17900**	**69700**	<2500	<2500	<0.021	NR	<5000	<5000	<50000	<2500	<100000	<50000	<50000	<25000
02567-MW10	4/17/2013	**4280**	286	**710**	2689	**14500**	**207**	<100	<0.020	**23.8**	<200	<200	<2,000	<100	<4,000	**20100**	**71100**	<1,000
	12/16/2014	**2400**	<1250	655 J	<2500	**7850**	<1250	<1250	<0.020	NR	<2500	<2500	<25000	<1250	<50000	<25000	**19300 J**	<12500
02567-MW11	4/17/2013	**19600**	**18000**	**2610**	**11600**	**16800**	**462**	<50.0	<0.020	**56.3**	<100	<100	<1,000	<50.0	<2,000	**8260**	**19200**	<500
	12/16/2014	**16100**	**13700**	**2860**	**12100**	**13900**	**623 J**	<1000	<0.020	NR	<2000	<2000	<20000	<1000	<40000	<20000	**15300 J**	<10000
02567-MW12	4/17/2013	**Free Product**																
	12/15/2014	**Free Product**																
02567-MW13	4/17/2013	**861**	<100	410	844	**4640**	**172**	<100	<0.019	**15.8**	<200	<200	<2,000	<100	<4,000	<2,000	**4610**	<1,000
	12/15/2014	**Free Product**																
02567-MW14	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**54.3**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW15	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**345**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW16	4/17/2013	<5.0	<5.0	<5.0	<15	9.1	<5.0	<5.0	<0.020	**845**	<10.0	<10.0	<100	<5.0	<200	**249**	**1730**	<50.0
	12/16/2014	<10.0	<10.0	<10.0	<20.0	8.5 J	<10.0	<10.0	<0.020	NR	<20.0	<20.0	<200	<10.0	<400	<200	601	<100

TABLE 4
GROUNDWATER ANALYTICAL DATA
RHODESWAY NORTH

Well ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)	Tertiary Amyl Methyl Ether (µg/L)	Ethyl tert-Butyl Ether (µg/L)	3,3-Dimethyl-1-butanol (µg/L)	Di-isopropyl Ether (µg/L)	Ethanol (µg/L)	Tertiary Amyl Alcohol (µg/L)	Tertiary Butyl Alcohol (µg/L)	Tertiary Butyl Formate (µg/L)
RBSLs/ALs		**5**	**1,000**	**700**	**10,000**	**40**	**25**	**5**	**0.05**	**15**	**128**	**47**	--	**150**	**10,000**	**240**	**1,400**	--
02567-MW17	4/17/2013	**Free Product**																
	12/15/2014	**Free Product**																
02567-MW18	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.021	**94.9**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW19	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.019	**30.2**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW20	4/30/2013	**324**	32.5	23.5	456.5	**3250**	16.8	<5.0	<0.020	**156**	12.7	<10.0	<100	<5.0	<200	**11700**	**11400**	<50.0
	12/15/2014	<500	<500	<500	<1000	**8130**	<500	<500	<0.021	NR	<1000	<1000	<10000	<500	<20000	**19700**	**33000**	<5000
02567-MW21	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**122**	<10.0	<10.0	<100	<5.0	<200	167	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	2.8 J	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	252	<50.0
02567-MW22	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**64.5**	<10.0	<10.0	<100	<5.0	<200	<100	128	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	2.0 J	<5.0	<5.0	<0.021	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-TW1	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**22.9**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-TW2	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**37.8**	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-RW1	4/17/2013	**2900**	**3030**	573	2632	**8200**	<250	<250	<0.020	**82.1**	<500	<500	<5,000	<250	<10,000	**6580**	**14000**	<2,500
	12/15/2014	**Free Product**																
02567-RW2	4/17/2013	**962**	334	200	815	**1260**	**68**	<50.0	<0.020	**30.9**	<100	<100	<1,000	<50.0	<2,000	**2840**	<100	<500
	12/15/2014	**Free Product**																
02567-RW3	4/17/2013	**2740**	**2920**	**963**	4,179	**13500**	<500	<500	<0.020	**52.7**	<1,000	<1,000	<10,000	<500	<20,000	<10,000	**11000**	<5,000
	12/15/2014	**Free Product**																
02567-SW1	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.4	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-SW2	4/30/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-WSW1	4/17/2013	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.2	NR	NR	NR	NR	NR	NR	NR	NR
	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0

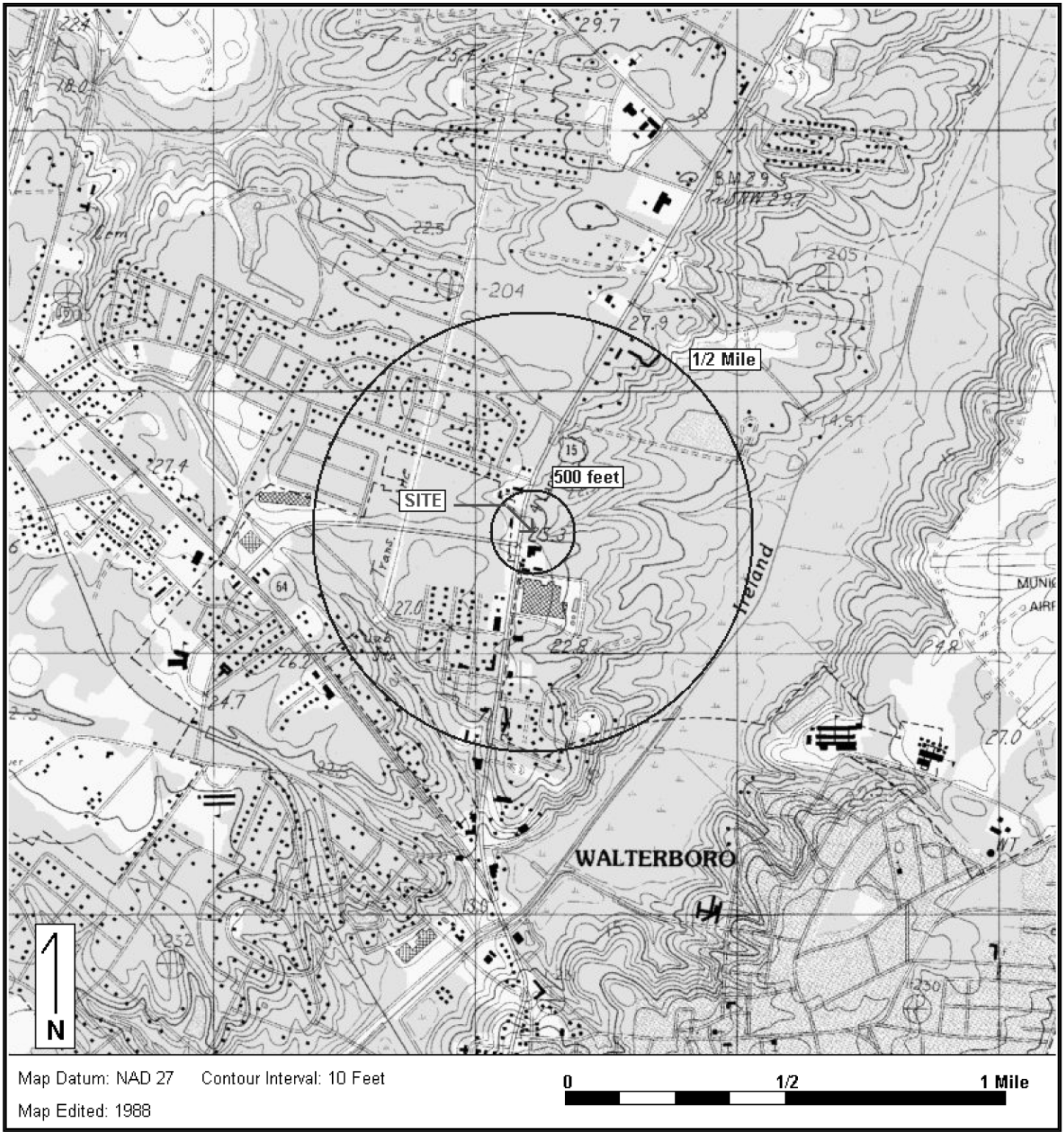
Notes:
Analyses for volatile organics by Method 8260; Analyses for EDB by EPA Method 8011; Analyses for Total Lead by Method 6010.
Concentrations in bold face type exceeded the RBSLs or ALs.
J - Estimated concentration between the laboratory reporting limit and the method detection limit.
< - Less that the method detection limit specified in the laboratory report.
NR - Analysis not requested.
Risk Based Action Levels are defined in the South Carolina Department of Health and Environmental Control (SCDHEC), Bureau of Land and Waste Management, Underground Storage Tank Program, May, 15, 2001, South Carolina Risk Based Corrective Action for Petroleum Releases. Corrective Action for Petroleum Releases.
The ALs are defined in SCDHEC, Bureau of Land and Waste Management, Underground Storage Tank Program, October 22, 2008, Certification of the Oxygenate Compounds.

FIGURES

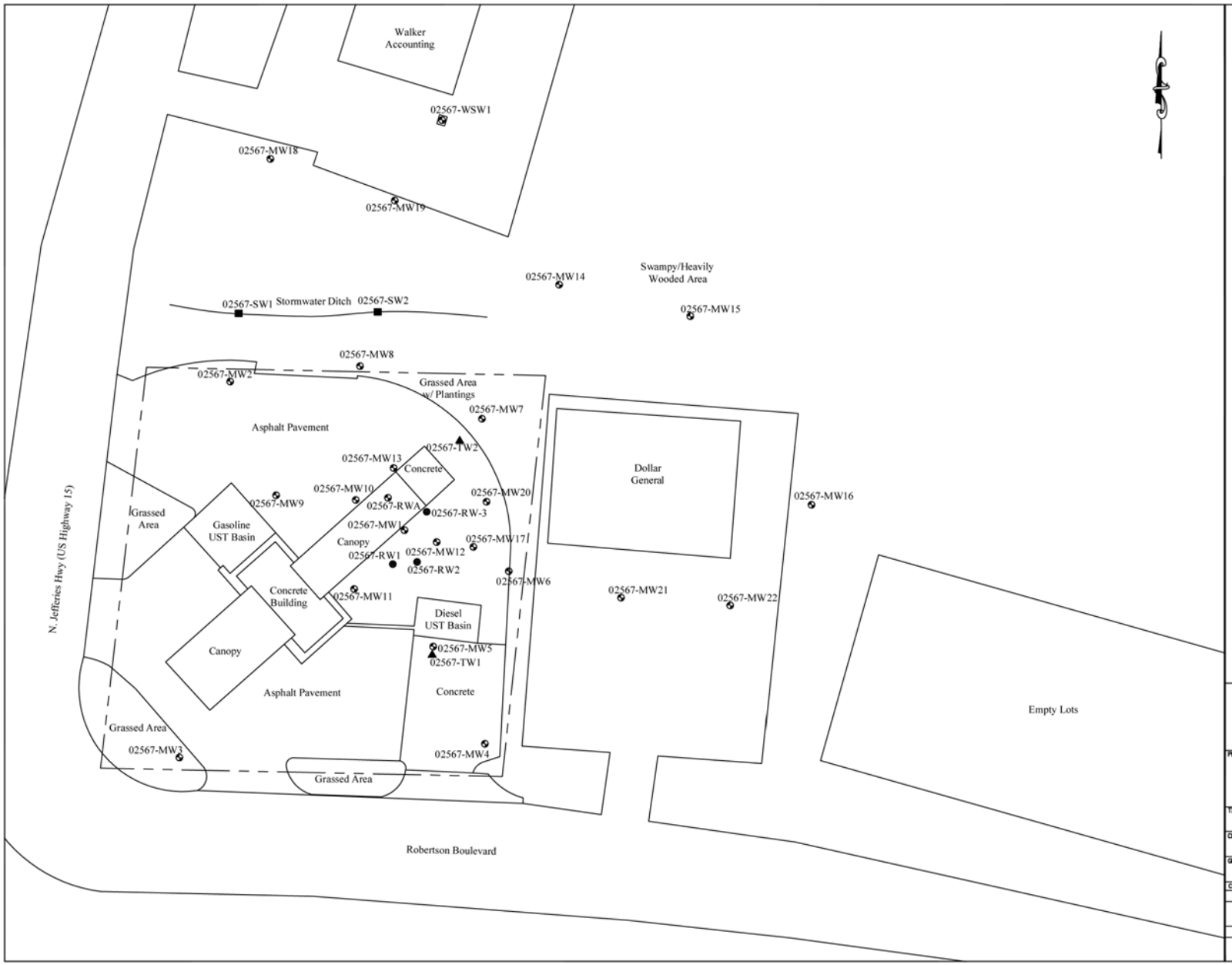
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins



Legend

02567-SW1	Surface Water Sample Loc.
02567-RW1	Recovery Well
02567-TW1	Deep Monitoring Well
02567-SW1	Shallow Monitoring Well
02567-WSW1	Water Supply Well

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-789-3530 Fax: 413-789-2776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

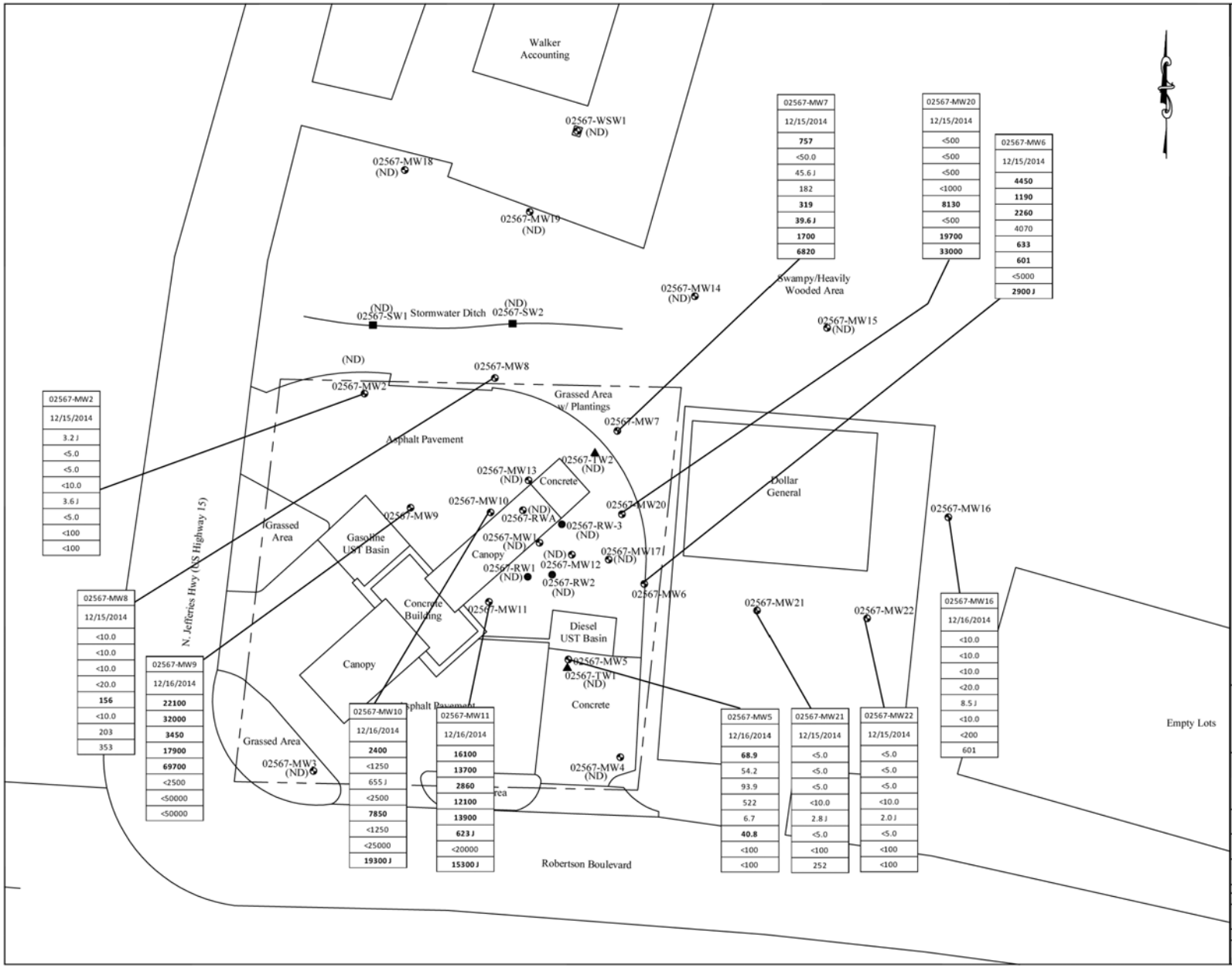
TITLE:
Site Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	12/23/14	14-215778	2



Legend

02567-SW1 Surface Water Sample Loc.
02567-RW1 Recovery Well
02567-TW1 Deep Monitoring Well
02567-SW1 Shallow Monitoring Well
02567-WSW1 Water Supply Well

Sample ID	AL/
Date	RBSL
Benzene	5
Toluene	1,000
Ethylbenzene	700
Xylene (Total)	10,000
Methyl-tert-butyl ether	40
Naphthalene	25
tert-Amyl Alcohol	240
tert-Butyl Alcohol	1,400

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Numbers in BOLD exceed RBSL's/ALS

Risk Based Action Levels are defined in the South Carolina Department of Health and Environmental Control (SCDHEC), Bureau of Land and Waste Management, Underground Storage Tank Program, May 15, 2001, South Carolina Risk Based Corrective Action for Petroleum Releases.

The AL's are defined in SCDHEC, Bureau of Land and Waste Management, Underground Storage Tank Program, October 22, 2008, Certification of the Oxygenate Compounds.

Analytical data reported micrograms per liter in (ug/L)

<- Less then Laboratory reporting limit

J- Estimated value below Laboratory reporting limit and above the detection limit

ND- Petroleum Constituents not Detected.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-789-3530 Fax: 413-789-2776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

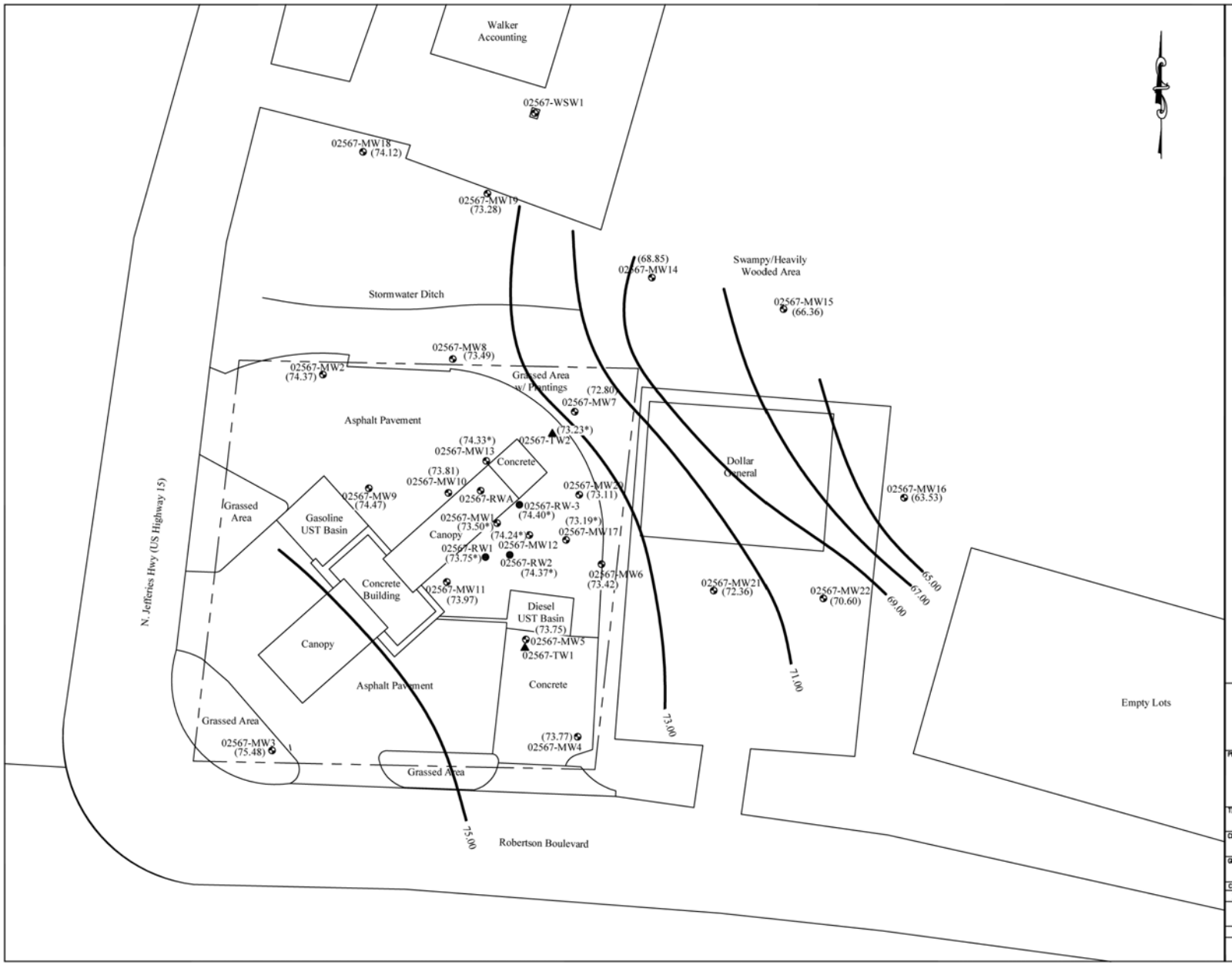
TITLE:
Groundwater Quality Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	12/22/14	14-215778	4



Legend

- 02567-RW1 — Recovery Well
- 02567-TW1 — Deep moitoring well
- 02567-MW1 — Shallow Monitoring Well
- (73.71) — Groundwater Elevation (feet)
- (73.71*) — Groundwater Elevation corrected for the presence of Free Product
- 75.00 — Groundwater Elevation Contour (Dashed where inferred)
- Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Deep monitoting wells not used to evaluate groundwater elevation

Groundwater elevations based on guaging event dated 12/15/2014 & 12/16/2014.

Free product density assumed to be 0.75g/ml

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-789-3530 Fax: 413-789-2776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Groundwater Elevation Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	12/17/14	14-215778	5

APPENDIX B

Sampling Logs, Laboratory Report, Chain of Custody Record and QA/QC Evaluation

GAUGE REPORT

Environmental Compliance Services, Inc.
13504 South Point Blvd., Unit F
Charlotte, North Carolina 28273

Project Name Rhdesway North Location Walterboro, SC

Project No. 14-215778 UST Permit # 02567 Date 4/17/2013

Measured By P. Pike Weather Mostly Sunny, 60s

Well ID	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Product Recovered (gallons)	Well Depth (feet)	Volume Purged (gallons)
02567-MW-1	4.55	4.91	0.36	-----	-----	-----
02567-MW-2	-----	3.83	-----	-----	13.26	0.00
02567-MW-3	-----	4.04	-----	-----	13.96	0.00
02567-MW-4	-----	2.79	-----	-----	12.36	4.68
02567-MW-5	-----	3.75	-----	-----	12.50	4.28
02567-MW-6	-----	4.08	-----	-----	12.72	4.22
02567-MW-7	-----	3.67	-----	-----	12.70	4.42
02567-MW-8	-----	3.65	-----	-----	12.97	4.56
02567-MW-9	-----	4.05	-----	-----	12.55	4.16
02567-MW-10	-----	4.29	-----	-----	12.67	4.10
02567-MW-11	-----	4.40	-----	-----	12.16	3.79
02567-MW-12	4.19	5.06	0.87	-----	-----	-----
02567-MW-13	-----	4.19	-----	-----	12.62	4.12
02567-MW-14	-----	3.25	-----	-----	7.56	2.11
02567-MW-15	-----	3.68	-----	-----	11.39	1.26
02567-MW-16	-----	3.80	-----	-----	10.12	1.03
02567-MW-17	3.88	5.09	1.21	-----	-----	-----
02567-TW-1	-----	4.44	-----	-----	35.42	25.25
02567-TW-2	-----	3.20	-----	-----	36.85	17.82
02567-RW-1	-----	4.40	-----	-----	12.94	16.76
02567-RW-2	-----	4.13	-----	-----	13.23	17.83
02567-RW-3		4.18	-----	-----	13.20	17.67
02567-WSW-1	-----	NM	-----	-----	NM	

Remarks:

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Serial Number:
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	ECS Office / Received by	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW1**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 5.41 ft.
Depth to FP (Free product) 4.69 ft.
FP Thickness 0.72 ft.
Length of Water Column (LWC=TWD-DGW) 0.00 ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.163 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/15/14			Well #	02567-MW2
Field Personnel	N France				
General Weather Conditions	Sunny			Well Diameter (D)	2.0 inch ____ or feet
Ambient Air Temperature	70 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID# 02567		Screen Interval	____ ft. to ____ ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	13.30 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	4.40 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba W22XD - U22	Serial Number:	T908007	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	8.90 ft.
pH 4.0 =	7.11	Conductivity 4.49 =	4.8		
Turbidity 0.0 =	0.0	Dissolved Oxygen 8.52 =	8.71		
	Chain of Custody			1Csg. Vol. (LWC*C)=	8.90 X 0.163 = 1.45 gal.
Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504	3Csg. Volume = 3x	1.45 = 4.35 gals.(Std. Purge Vol)
Relinquished by	Date/Time	Received by	Date/Time	Total Vol. of Water Purged Before Sampling	1.45 gal.
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600	Well Yield	Low ____ Medium ____ High X
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	14:26	14:32						14:43
pH (s.u.)	7.46	6.93						6.72
O.R.P. (mV)	187	212						209
Temperature (°C)	28.83	27.45						26.68
Specific Cond. (mS/cm)	0.004	0.004						0.005
Dissolved Oxygen (mg/L)	6.80	7.08						7.25
Turbidity (NTU)	>999	162.0						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry after one well volume

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/15/14			Well #	**02567-MW3**
Field Personnel	A. yim				
General Weather Conditions	Sunny			Well Diameter (D)	2.0 inch _____ or feet
Ambient Air Temperature	75 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID# 02567		Screen Interval	_____ ft. to _____ ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	14.45 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	4.66 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba W22XD - U22	Serial Number:	T908007	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	9.79 ft.
pH 4.0 =	3.97	Conductivity 4.49 =	4.63		
Turbidity 0.0 =	0.0	Dissolved Oxygen 8.52 =	11.14		
	Chain of Custody			1Csg. Vol. (LWC*C)=	9.79 X 0.163 = 1.60 gal.
Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504	3Csg. Volume = 3x	1.60 = 4.79 gals.(Std. Purge Vol)
Relinquished by	Date/Time	Received by	Date/Time	Total Vol. of Water Purged Before Sampling	6.40 gal.
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600	Well Yield	Low _____ Medium _____ High X
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	14:05	14:10	14:15	14:20	14:25			14:30
pH (s.u.)	5.96	6.02	6.08	6.02	6.02			6.04
O.R.P. (mV)	-17	-30	-37	-16	-18			-19
Temperature (°C)	21.15	21.51	21.67	21.89	21.87			21.86
Specific Cond. (mS/cm)	0.300	0.293	0.300	0.297	0.288			0.288
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	214.0	>999	>999	>999	>999			>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel A Yim
General Weather Conditions Sunny
Ambient Air Temperature 75 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 Conductivity 4.49 = 4.63
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW4**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 12.50 ft.
Depth to GW(DGW) 3.45 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 9.05 ft.

1Csg. Vol. (LWC*C)= 9.05 X 0.163 = 1.48 gal.
3Csg. Volume = 3x 1.48 = 4.43 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 7.40 gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	11:25	11:30	11:35	11:40	11:45	11:50		11:55
pH (s.u.)	4.15	5.76	5.90	6.43	6.20	6.18		6.17
O.R.P. (mV)	152	-48	-86	-96	-56	-57		-55
Temperature (°C)	14.73	15.04	15.82	15.99	16.66	16.68		16.66
Specific Cond. (mS/cm)	0.480	0.445	0.424	0.427	0.430	0.444		0.439
Dissolved Oxygen (mg/L)	0.39	0.00	0.24	10.00	10.00	10.02		10.01
Turbidity (NTU)	48.6	>999	>999	>999	>999	>999		>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14			Well #	**02567-MW5**
Field Personnel	A Yim				
General Weather Conditions	Sunny			Well Diameter (D)	2.0 inch ____ or feet
Ambient Air Temperature	60 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID#	02567	Screen Interval	____ ft. to ____ ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	12.45 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	4.33 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba U52	Serial Number:	7MU1T389	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	8.12 ft.
pH 4.0 =	3.97	Conductivity 4.49 =	4.63		
Turbidity 0.0 =	0.0	Dissolved Oxygen 8.52 =	11.14	1Csg. Vol. (LWC*C)=	8.12 X 0.163 = 1.32 gal.
	Chain of Custody			3Csg. Volume = 3x	1.32 = 3.97 gals.(Std. Purge Vol)
Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504	Total Vol. of Water Purged Before Sampling	5.28 gal.
Relinquished by	Date/Time	Received by	Date/Time	Well Yield	Low ____ Medium ____ High X
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600		
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	9:55	10:00	10:05	10:10	10:15			10:20
pH (s.u.)	5.29	5.26	5.32	5.40	5.39			5.41
O.R.P. (mV)	43	32	21	14	14			13
Temperature (°C)	19.33	20.93	21.73	22.04	22.06			22.07
Specific Cond. (mS/cm)	0.111	0.103	0.110	0.117	0.115			0.115
Dissolved Oxygen (mg/L)	2.60	1.72	0.51	0.50	0.51			0.49
Turbidity (NTU)	290.0	>999	>999	>999	>999			>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/15/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	60 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	7.64		Conductivity 4.49 =	5.06	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	9.21	
	Chain of Custody				
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW6				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval		ft. to		ft.	
Total Well Depth (TWD)	12.70	ft.			
Depth to GW(DGW)	4.41	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.29	ft.			
1Csg. Vol. (LWC*C)=	8.29	X	0.163	=	1.35 gal.
3Csg. Volume = 3x	1.35	=	4.05	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			1.35	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	11:46	11:52						11:54
pH (s.u.)	7.48	7.59						7.58
O.R.P. (mV)	220	203						201
Temperature (°C)	18.49	20.72						20.22
Specific Cond. (mS/cm)	0.004	0.004						0.004
Dissolved Oxygen (mg/L)	9.09	8.28						8.54
Turbidity (NTU)	0.0	0.0						0.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well goes dry after first well volume. Water has musty odor

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/15/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	70 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	7.64		Conductivity 4.49 =	5.06	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	9.21	
Chain of Custody					
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW7				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=	0.163		
for a 4 inch well C=	0.652	for a 6 inch well C=	1.469		
Screen Interval		ft.	to	ft.	
Total Well Depth (TWD)	12.70	ft.			
Depth to GW(DGW)	4.14	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.56	ft.			
1Csg. Vol. (LWC*C)=	8.56	X	0.163	=	1.40 gal.
3Csg. Volume = 3x	1.40	=	4.19	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			1.40	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	12:51	13:40						13:15
pH (s.u.)	7.58	7.35						7.33
O.R.P. (mV)	195	205						208
Temperature (°C)	21.00	20.32						20.36
Specific Cond. (mS/cm)	0.004	0.004						0.004
Dissolved Oxygen (mg/L)	8.41	8.67						8.77
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Water is black with organic materials and has petroleum odor. Well is dry after one well volume.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/15/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	70 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	7.64		Conductivity 4.49 =	5.06	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	9.21	
Chain of Custody					
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW8				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=	0.163		
for a 4 inch well C=	0.652	for a 6 inch well C=	1.469		
Screen Interval		ft.	to	ft.	
Total Well Depth (TWD)	12.64	ft.			
Depth to GW(DGW)	4.26	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.38	ft.			
1Csg. Vol. (LWC*C)=	8.38	X	0.163	=	1.37 gal.
3Csg. Volume = 3x	1.37	=	4.10	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			1.36	gal.	
Well Yield	Low		Medium		High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	15:02	15:06						15:20
pH (s.u.)	6.74	6.51						6.54
O.R.P. (mV)	190	200						198
Temperature (°C)	25.24	24.13						23.88
Specific Cond. (mS/cm)	0.006	0.004						0.005
Dissolved Oxygen (mg/L)	7.71	8.04						8.15
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well went dry after one well volume

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	40 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	7.11		Conductivity 4.49 =	4.8	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	11.8	
	Chain of Custody				
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW9				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval		ft. to		ft.	
Total Well Depth (TWD)	12.55	ft.			
Depth to GW(DGW)	4.57	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	7.98	ft.			
1Csg. Vol. (LWC*C)=	7.98	X	0.163	=	1.30 gal.
3Csg. Volume = 3x	1.30	=	3.90	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			1.80	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	7:53	7:57						8:10
pH (s.u.)	4.42	4.59						4.71
O.R.P. (mV)	305	313						325
Temperature (°C)	7.65	9.33						10.08
Specific Cond. (mS/cm)	0.016	0.009						0.007
Dissolved Oxygen (mg/L)	12.88	12.21						12.34
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry after one well volume and one half gallon. Sheen on purge water strong petroleum odor.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	45 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
	Calibration Measurement Results				
pH 4.0 =	7.11		Conductivity 4.49 =	4.8	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	11.8	
	Chain of Custody				
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW10				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval		ft. to		ft.	
Total Well Depth (TWD)	12.82	ft.			
Depth to GW(DGW)	4.81	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	8.01	ft.			
1Csg. Vol. (LWC*C)=	8.01	X	0.163	=	1.31 gal.
3Csg. Volume = 3x	1.31	=	3.92	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			4.10	gal.	
Well Yield	Low		Medium		High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	8:35	8:40						8:47
pH (s.u.)	4.75	5.08						5.07
O.R.P. (mV)	353	353						355
Temperature (°C)	11.45	12.15						12.77
Specific Cond. (mS/cm)	0.004	0.004						0.006
Dissolved Oxygen (mg/L)	12.52	12.28						12.08
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves. Dry after one well volume
Strong petroleum odor in purge water, sheen on purge water

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14				
Field Personnel	N France				
General Weather Conditions	Sunny				
Ambient Air Temperature	50 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
Quality Assurance:					
Water Quality Meter:	Horiba W22XD - U22		Serial Number:	T908007	
Calibration Measurement Results					
pH 4.0 =	7.11		Conductivity 4.49 =	4.8	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	11.8	
Chain of Custody					
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-MW11				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2			for a 2 inch well C=		0.163
for a 4 inch well C=	0.652		for a 6 inch well C=		1.469
Screen Interval		ft.	to	ft.	
Total Well Depth (TWD)	12.29	ft.			
Depth to GW(DGW)	5.04	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	7.25	ft.			
1Csg. Vol. (LWC*C)=	7.25	X	0.163	=	1.18 gal.
3Csg. Volume = 3x	1.18	=	3.55	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling				1.18	gal.
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	9:57	10:01						10:15
pH (s.u.)	5.43	5.44						5.53
O.R.P. (mV)	354	353						350
Temperature (°C)	17.99	18.44						20.94
Specific Cond. (mS/cm)	0.004	0.004						0.004
Dissolved Oxygen (mg/L)	10.72	10.52						9.55
Turbidity (NTU)	>999	>999						>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at one well volume

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Serial Number:
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	ECS Office / Received by	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW12**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 5.06 ft.
Depth to FP (Free product) 4.67 ft.
FP Thickness 0.39 ft.
Length of Water Column (LWC=TWD-DGW) 0.00 ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.163 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/16/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Serial Number:
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW13**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 4.91 ft.
Depth to FP (Free product) 4.60 ft.
FP Thickness 0.31 ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.163 = ##### gal.
3Csg. Volume = 3x #VALUE! = ######## gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling _____ gal.
Well Yield Low _____ Medium _____ High **X**

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Well not sampled due to the presence of Free Product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/16/14
Field Personnel A Yim
General Weather Conditions Sunny
Ambient Air Temperature 55 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 Conductivity 4.49 = 4.63
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW14**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 7.65 ft.
Depth to GW(DGW) 3.15 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 4.50 ft.

1Csg. Vol. (LWC*C)= 4.50 X 0.163 = 0.73 gal.
3Csg. Volume = 3x 0.73 = 2.20 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 2.92 gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	8:35	8:40	8:45	8:50	8:55			9:00
pH (s.u.)	5.01	5.51	5.86	5.89	5.91			5.90
O.R.P. (mV)	123	6	-34	-35	-33			-31
Temperature (°C)	12.73	12.74	12.76	12.74	12.76			12.75
Specific Cond. (mS/cm)	0.067	0.111	0.149	0.849	0.139			0.140
Dissolved Oxygen (mg/L)	0.85	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	783.0	893.0	>999	>999	>999			>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14			Well #	**02567-MW15**
Field Personnel	A Yim				
General Weather Conditions	Sunny			Well Diameter (D)	2.0 inch ____ or feet
Ambient Air Temperature	55 F			conversion factor(C): 3.143*(D/2)^2	for a 2 inch well C= 0.163
				for a 4 inch well C= 0.652	for a 6 inch well C= 1.469
Facility Name	Rhdesway North	Site ID#	02567	Screen Interval	____ ft. to ____ ft.
Method of Well Purging:	Bailer x	Pump Type	--	Total Well Depth (TWD)	11.55 ft.
Method of Sample Collection:	Bailer x	Pump Type	--	Depth to GW(DGW)	3.64 ft.
	Quality Assurance:			Depth to FP (Free product)	----- ft.
Water Quality Meter:	Horiba U52	Serial Number:	7MU1T389	FP Thickness	----- ft.
	Calibration Measurement Results			Length of Water Column (LWC=TWD-DGW)	7.91 ft.
pH 4.0 =	3.97	Conductivity 4.49 =	4.63		
Turbidity 0.0 =	0.0	Dissolved Oxygen 8.52 =	11.14		
	Chain of Custody			1Csg. Vol. (LWC*C)=	7.91 X 0.163 = 1.29 gal.
Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504	3Csg. Volume = 3x	1.29 = 3.87 gals.(Std. Purge Vol)
Relinquished by	Date/Time	Received by	Date/Time	Total Vol. of Water Purged Before Sampling	2.58 gal.
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600	Well Yield	Low X Medium ____ High ____
Relinquished by	Date/Time	Received by	Date/Time		

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	9:40	9:15	9:20					9:25
pH (s.u.)	5.33	5.35	5.33					5.34
O.R.P. (mV)	145	165	167					169
Temperature (°C)	15.31	17.03	17.05					17.03
Specific Cond. (mS/cm)	0.051	0.051	0.049					0.049
Dissolved Oxygen (mg/L)	0.00	0.61	0.59					0.60
Turbidity (NTU)	41.6	>999	>999					>999

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well purged dry after 2 well volumes.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/16/14
Field Personnel A Yim
General Weather Conditions Sunny
Ambient Air Temperature 50 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 Conductivity 4.49 = 4.63
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW16**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 10.25 ft.
Depth to GW(DGW) 3.47 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 6.78 ft.

1Csg. Vol. (LWC*C)= 6.78 X 0.163 = 1.11 gal.
3Csg. Volume = 3x 1.11 = 3.32 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 2.22 gal.
Well Yield Low X Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	7:45	7:50	7:55					8:00
pH (s.u.)	4.70	4.89	4.89					4.90
O.R.P. (mV)	117	119	117					116
Temperature (°C)	15.73	17.38	17.40					17.42
Specific Cond. (mS/cm)	0.089	0.073	0.074					0.07
Dissolved Oxygen (mg/L)	3.80	1.46	0.00					0.00
Turbidity (NTU)	252.0	>999	>999					>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well purged dry after two well volumes.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW17**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 5.85 ft.
Depth to FP (Free product) 4.20 ft.
FP Thickness 1.65 ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.163 = ##### gal.
3Csg. Volume = 3x #VALUE! = ######## gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Not sampled due to the presence of free product.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/d 12/15/14
Field Persc N France
General Weather Conditions Sunny
Ambient Air Temperat 60 F

Facility Nai Project Name | Site ID# | UST Permit #
Method of Well Purging: Bailer x | Pump Type --
Method of Sample Collection: Bailer x | Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 | Serial Number: T908007

Calibration Measurement Results
pH 4.0 = 7.64 | Conductivity 4.49 = 5.06
Turbidity 0. 0.0 | Dissolved Oxygen 8.52 = 9.21

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW18**

Well Diameter (D) 2.0 inch ____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval 20.02 ft. to 35.02 ft.
Total Well Depth (TWD) 12.27 ft.
Depth to GW(DGW) 2.20 ft.
Depth to FP (Free product) 02567-MW17 ft.
FP Thickness 5.85 ft.
Length of Water Column (LWC=TWD-DGW) 10.07 ft.

1Csg. Vol. (LWC*C)= 10.07 X 0.163 = 1.64 gal.
3Csg. Volume = 3x 1.64 = 4.92 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 6.56 gal.
Well Yield Low ____ Medium ____ High ____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	16:17	16:20	16:32	16:39	16:46			16:55
pH (s.u.)	6.66	6.39	6.63	6.39	6.44			NR
O.R.P. (mV)	205	211	218	205	206			NR
Temperature (°C)	22.72	20.20	18.31	18.36	18.34			NR
Specific Cond. (mS/cm)	0.005	0.004	0.004	0.003	0.003			NR
Dissolved Oxygen (mg/L)	8.27	9.10	9.68	9.54	NR			NR
Turbidity (NTU)	>999	>999	>999	>999	NR			NR

Remarks Horiba batteries need replacing 4th volume and sampling readings could not be completed.
NR not recorded due to instrument failure
Well dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/d 12/15/14
Field Persc A Yim
General Weather Conditions Sunny
Ambient Air Temperati 70 F

Facility Nai Rhodesway North — Site ID# 02567
Method of Well Purging: Bailer x — Pump Type --
Method of Sample Collection: Bailer x — Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 — Serial Number: 7MU1T389

Calibration Measurement Results
pH 4.0 = 3.97 — Conductivity 4.49 = 4.63
Turbidity 0. 0.0 — Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW18**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 — for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 — for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 12.20 ft.
Depth to GW(DGW) 1.52 ft.
Depth to FP (Free product) _____ ft.
FP Thickness _____ ft.
Length of Water Column (LWC=TWD-DGW) 10.68 ft.

1Csg. Vol. (LWC*C)= 10.68 X 0.163 = 1.74 gal.
3Csg. Volume = 3x 1.74 = 5.22 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 6.96 gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	16:15	16:20	16:25	16:30	16:35			16:40
pH (s.u.)	5.91	5.97	5.96	6.12	6.10			6.09
O.R.P. (mV)	-10	-27	-35	-45	-47			-45
Temperature (°C)	18.30	18.23	18.89	18.98	19.0			19.02
Specific Cond. (mS/cm)	0.189	0.212	0.226	0.226	0.235			0.235
Dissolved Oxygen (mg/L)	0.00	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	73.1	>999	>999	>999	>999			>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at fourth volume

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/c 12/15/14
Field Pers N France
General Weather Conditions Sunny
Ambient Air Temperati 70 F

Facility Na Project Name Site ID#
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:

Water Quality Meter: Horiba W22XD - U22 Serial Number: T908007

Calibration Measurement Results

pH 4.0 = 7.11 Conductivity 4.49 = 4.8
Turbidity 0. 0.0 Dissolved Oxygen 8.52 = 11.8

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
elinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW20**

Well Diameter (D) 2.0 inch or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval ft. to ft.
Total Well Depth (TWD) 12.85 ft.
Depth to GW(DGW) 4.35 ft.
Depth to FP (Free product) ft.
FP Thickness ft.
Length of Water Column (LWC=TWD-DGW) 8.50 ft.

1Csg. Vol. (LWC*C)= 8.50 X 0.163 = 1.39 gal.
3Csg. Volume = 3x 1.39 = 4.16 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling gal.
Well Yield Low Medium High

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	12:16							12:35
pH (s.u.)	7.04							6.81
O.R.P. (mV)	222							222
Temperature (°C)	19.55							19.03
Specific Cond. (mS/cm)	0.004							0.005
Dissolved Oxygen (mg/L)	8.09							9.06
Turbidity (NTU)	>999							>999

Remarks Well dry at 1/2 well volume
Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/d 12/15/14
Field Persc A Yim
General Weather Conditions Sunny
Ambient Air Temperati 75 F

Facility Nai Project Name — Site ID# 02567
Method of Well Purging: Bailer x — Pump Type --
Method of Sample Collection: Bailer x — Pump Type --

Quality Assurance:

Water Quality Meter: Horiba U52 — Serial Number: 7MU1T389

Calibration Measurement Results

pH 4.0 = 3.97 — Conductivity 4.49 = 4.63
Turbidity 0. 0.0 — Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW21**

Well Diameter (D) 2.0 inch ____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval ____ ft. to ____ ft.
Total Well Depth (TWD) 12.75 ft.
Depth to GW(DGW) 3.39 ft.
Depth to FP (Free product) ____ ft.
FP Thickness ____ ft.
Length of Water Column (LWC=TWD-DGW) 9.36 ft.

1Csg. Vol. (LWC*C)= 9.36 X 0.163 = 1.53 gal.
3Csg. Volume = 3x 1.53 = 4.58 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 7.60 gal.
Well Yield Low ____ Medium ____ High ____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	12:20	12:25	12:30	12:35	12:40	12:45		12:50
pH (s.u.)	7.48	6.03	7.12	6.15	5.59	5.58		5.60
O.R.P. (mV)	217	22	-94	-70	9	6		8
Temperature (°C)	18.63	19.51	20.69	21.47	22.72	22.70		22.82
Specific Cond. (mS/cm)	0.181	0.202	0.195	0.196	0.180	0.180		0.180
Dissolved Oxygen (mg/L)	9.60	0.00	0.00	0.00	0.00	0.00		0.00
Turbidity (NTU)	150.0	>999	>999	>999	>999	>999		>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/c 12/15/14
Field Persc A Yim
General Weather Conditions Sunny
Ambient Air Temperat 75 F

Facility Nai Rhodesway North — Site ID# 02567
Method of Well Purging: Bailer x — Pump Type --
Method of Sample Collection: Bailer x — Pump Type --

Quality Assurance:
Water Quality Meter: Horiba - U52 — Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 — Conductivity 4.49 = 4.63
Turbidity 0. 0.0 — Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW22**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 — for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 — for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 13.40 ft.
Depth to GW(DGW) 5.07 ft.
Depth to FP (Free product) _____ ft.
FP Thickness _____ ft.
Length of Water Column (LWC=TWD-DGW) 8.33 ft.

1Csg. Vol. (LWC*C)= 8.33 X 0.163 = 1.36 gal.
3Csg. Volume = 3x 1.36 = 4.07 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling _____ gal.
Well Yield Low _____ Medium _____ High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	13:15	13:20	13:25	13:30	13:35			13:40
pH (s.u.)	5.68	5.64	5.40	5.39	5.41			5.39
O.R.P. (mV)	11	4	15	26	23			21
Temperature (°C)	23.66	22.39	22.90	23.36	23.4			23.40
Specific Cond. (mS/cm)	0.231	0.255	0.258	0.222	0.211			0.211
Dissolved Oxygen (mg/L)	6.03	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	121.0	>999	>999	>999	>999			>999

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Well dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	12/16/14				
Field Personnel	A Yim				
General Weather Conditions	Sunny				
Ambient Air Temperature	65 F				
Facility Name	Rhdesway North		Site ID# 02567		
Method of Well Purging:	Bailer	x	Pump Type	--	
Method of Sample Collection:	Bailer	x	Pump Type	--	
	Quality Assurance:				
Water Quality Meter:	Horiba U52		Serial Number:	7MU1T389	
	Calibration Measurement Results				
pH 4.0 =	3.97		Conductivity 4.49 =	4.63	
Turbidity 0.0 =	0.0		Dissolved Oxygen 8.52 =	11.14	
	Chain of Custody				
Noelle France	12/16/14 1504		Kurt Blevins	12/16/14 1504	
Relinquished by	Date/Time		Received by	Date/Time	
Kurt Blevins	12/16/14 1600		Pace	12/16/14 1600	
Relinquished by	Date/Time		Received by	Date/Time	

Well #	02567-TW1				
Well Diameter (D)	2.0	inch		or feet	
conversion factor(C): 3.143*(D/2)^2		for a 2 inch well C=		0.163	
for a 4 inch well C=	0.652	for a 6 inch well C=		1.469	
Screen Interval		ft. to		ft.	
Total Well Depth (TWD)	35.65	ft.			
Depth to GW(DGW)	5.42	ft.			
Depth to FP (Free product)	-----	ft.			
FP Thickness	-----	ft.			
Length of Water Column (LWC=TWD-DGW)	30.23	ft.			
1Csg. Vol. (LWC*C)=	30.23	X	0.163	=	4.93 gal.
3Csg. Volume = 3x	4.93	=	14.78	gals.(Std. Purge Vol)	
Total Vol. of Water Purged Before Sampling			19.70	gal.	
Well Yield	Low		Medium	High	X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	10:45	10:50	11:00	11:05	11:10			11:15
pH (s.u.)	5.92	5.49	5.22	5.21	5.21			5.20
O.R.P. (mV)	11	89	119	121	120			122
Temperature (°C)	22.64	23.12	23.59	23.64	23.66			23.68
Specific Cond. (mS/cm)	0.440	0.029	0.027	0.027	0.027			0.027
Dissolved Oxygen (mg/L)	1.74	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	320.0	349.0	829.0	>999	830.0			834.0

Remarks: Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Dry at 4 volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel A. Yim
General Weather Conditions Sunny
Ambient Air Temperature 75 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 Conductivity 4.49 = 4.63
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-TW2**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) 37.10 ft.
Depth to GW(DGW) 3.94 ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) 33.16 ft.

1Csg. Vol. (LWC*C)= 33.16 X 0.163 = 5.41 gal.
3Csg. Volume = 3x 5.41 = 16.22 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 21.62 gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	14:50	15:00	15:10	15:15	15:20			15:25
pH (s.u.)	6.04	5.37	5.21	5.19	5.19			5.20
O.R.P. (mV)	121	145	151	147	146			145
Temperature (°C)	21.42	22.80	22.82	22.81	22.9			22.84
Specific Cond. (mS/cm)	0.037	0.023	0.022	0.022	0.023			0.022
Dissolved Oxygen (mg/L)	2.16	0.00	0.00	0.00	0.00			0.00
Turbidity (NTU)	387.0	>999	625.0	560.0	569.0			571.0

Remarks Purged and sampled using a new, clean, disposable polyethylene bailer and nitrile gloves.
Dry at 4 well volumes

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Serial Number:
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	ECS Office Received by	Date/Time
		Pace	
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-RW1**

Well Diameter (D) 4.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 5.11 ft.
Depth to FP (Free product) 4.99 ft.
FP Thickness 0.12 ft.
Length of Water Column (LWC=TWD-DGW) _____ ft.

1Csg. Vol. (LWC*C)= _____ X 0.653 = 0.00 gal.
3Csg. Volume = 3x _____ = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling ----- gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Well not sampled due to the presence of Free Product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Serial Number:
Calibration Measurement Results
pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Relinquished by	Date/Time	ECS Office Received by	Date/Time
		Pace	
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-RW2**

Well Diameter (D) 4.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 4.90 ft.
Depth to FP (Free product) 4.55 ft.
FP Thickness 0.35 ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.653 = ##### gal.
3Csg. Volume = 3x #VALUE! = ######## gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling 17.83 gal.
Well Yield Low _____ Medium _____ High **X**

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Well not sampled due to the presence of free product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel N France
General Weather Conditions Sunny, 60's
Ambient Air Temperature 60 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:

Water Quality Meter: Serial Number:

Calibration Measurement Results

pH 4.0 = Conductivity 4.49 =
Turbidity 0.0 = Dissolved Oxygen 8.52 =

Chain of Custody

Relinquished by	Date/Time	Received by	Date/Time
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-RW3**

Well Diameter (D) 4.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) ----- ft.
Depth to GW(DGW) 4.78 ft.
Depth to FP (Free product) 0.35 ft.
FP Thickness 0.22 ft.
Length of Water Column (LWC=TWD-DGW) _____ ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.653 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling _____ gal.
Well Yield Low _____ Medium _____ High **X**

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								
pH (s.u.)								
O.R.P. (mV)								
Temperature (°C)								
Specific Cond. (mS/cm)								
Dissolved Oxygen (mg/L)								
Turbidity (NTU)								

Remarks Well not sampled due to presence of free product

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/c 12/15/14
Field Perso N France
General Weather Conditions Sunny
Ambient Air Temperat 70 F

Facility Nai Rhodesway North — Site ID# 02567
Method of Well Purging: Bailer x — Pump Type --
Method of Sample Collection: Bailer x — Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 — Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 7.11 — Conductivity 4.49 = 4.8
Turbidity 0. 0.0 — Dissolved Oxygen 8.52 = 11.8

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567 -SW1**

Well Diameter (D) _____ inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 — for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 — for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) _____ ----- ft.
Depth to GW(DGW) _____ ----- ft.
Depth to FP (Free product) _____ ft.
FP Thickness _____ ----- ft.
Length of Water Column (LWC=TWD-DGW) _____ ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.653 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling _____ gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								13:38
pH (s.u.)								7.29
O.R.P. (mV)								211
Temperature (°C)								23.44
Specific Cond. (mS/cm)								0.004
Dissolved Oxygen (mg/L)								8.00
Turbidity (NTU)								0.0

Remarks Surface water sampled with bailer and clean nylon string

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/c 12/16/14
Field Persc N France
General Weather Conditions Sunny
Ambient Air Temperat 50 F

Facility Nai Rhodesway North — Site ID# 02567
Method of Well Purging: Bailer x — Pump Type --
Method of Sample Collection: Bailer x — Pump Type --

Quality Assurance:
Water Quality Meter: Horiba W22XD - U22 — Serial Number: T908007
Calibration Measurement Results
pH 4.0 = 7.11 — Conductivity 4.49 = 4.8
Turbidity 0. 0.0 — Dissolved Oxygen 8.52 = 11.8

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-SW2**

Well Diameter (D) _____ inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 — for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 — for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) _____ ----- ft.
Depth to GW(DGW) _____ ----- ft.
Depth to FP (Free product) _____ ft.
FP Thickness _____ ----- ft.
Length of Water Column (LWC=TWD-DGW) _____ ft.

1Csg. Vol. (LWC*C)= 0.00 X 0.653 = 0.00 gal.
3Csg. Volume = 3x 0.00 = 0.00 gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling _____ gal.
Well Yield Low _____ Medium _____ High X

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)								9:12
pH (s.u.)								5.10
O.R.P. (mV)								360
Temperature (°C)								12.42
Specific Cond. (mS/cm)								0.005
Dissolved Oxygen (mg/L)								12.29
Turbidity (NTU)								>999

Remarks Surface water sampled with bailer and clean nylon string

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 12/15/14
Field Personnel A Yim
General Weather Conditions Sunny
Ambient Air Temperature 70 F

Facility Name Rhdesway North Site ID# 02567
Method of Well Purging: Bailer x Pump Type --
Method of Sample Collection: Bailer x Pump Type --

Quality Assurance:
Water Quality Meter: Horiba U52 Serial Number: 7MU1T389
Calibration Measurement Results
pH 4.0 = 3.97 Conductivity 4.49 = 4.63
Turbidity 0.0 = 0.0 Dissolved Oxygen 8.52 = 11.14

Chain of Custody

Noelle France	12/16/14 1504	Kurt Blevins	12/16/14 1504
Relinquished by	Date/Time	Received by	Date/Time
Kurt Blevins	12/16/14 1600	Pace	12/16/14 1600
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-WSW1**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2 for a 2 inch well C= 0.163
for a 4 inch well C= 0.652 for a 6 inch well C= 1.469
Screen Interval _____ ft. to _____ ft.
Total Well Depth (TWD) NM ft.
Depth to GW(DGW) ----- ft.
Depth to FP (Free product) ----- ft.
FP Thickness ----- ft.
Length of Water Column (LWC=TWD-DGW) #VALUE! ft.

1Csg. Vol. (LWC*C)= #VALUE! X 0.163 = ##### gal.
3Csg. Volume = 3x #VALUE! = ####### gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling NM gal.
Well Yield Low _____ Medium X High _____

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)								
Time (military)	17:55							18:12
pH (s.u.)	8.45							8.47
O.R.P. (mV)	-9							-11
Temperature (°C)	17.31							17.33
Specific Cond. (mS/cm)	0.636							0.634
Dissolved Oxygen (mg/L)	2.74							2.93
Turbidity (NTU)	25.2							22.7

Remarks

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 22, 2014

Noelle France
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: Rhodesway North
Pace Project No.: 92229917

Dear Noelle France:
Enclosed are the analytical results for sample(s) received by the laboratory on December 16, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Nicole Benjamin
nicole.benjamin@pacelabs.com
Project Manager

Enclosures

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Rhodesway North
Pace Project No.: 92229917

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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Huntersville, NC 28078
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SAMPLE SUMMARY

Project: Rhodesway North
Pace Project No.: 92229917

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92229917001	02567-MW4	Water	12/15/14 11:55	12/16/14 16:00
92229917002	02567-MW21	Water	12/15/14 12:50	12/16/14 16:00
92229917003	02567-MW22	Water	12/15/14 13:40	12/16/14 16:00
92229917004	02567-MW3	Water	12/15/14 14:30	12/16/14 16:00
92229917005	02567-TW2	Water	12/15/14 15:25	12/16/14 16:00
92229917006	02567-MW19	Water	12/15/14 16:40	12/16/14 16:00
92229917007	02567-WSW1	Water	12/15/14 17:12	12/16/14 16:00
92229917008	02567-MW16	Water	12/16/14 08:00	12/16/14 16:00
92229917009	02567-MW14	Water	12/16/14 09:00	12/16/14 16:00
92229917010	02567-MW15	Water	12/16/14 09:25	12/16/14 16:00
92229917011	02567-MW5	Water	12/16/14 10:20	12/16/14 16:00
92229917012	02567-TW1	Water	12/16/14 11:15	12/16/14 16:00
92229917013	02567-MW6	Water	12/15/14 11:54	12/16/14 16:00
92229917014	02567-MW20	Water	12/15/14 12:35	12/16/14 16:00
92229917015	02567-MW7	Water	12/15/14 13:15	12/16/14 16:00
92229917016	Duplicate 1	Water	12/15/14 00:00	12/16/14 16:00
92229917017	02567-SW1	Water	12/15/14 13:38	12/16/14 16:00
92229917018	02567-MW2	Water	12/15/14 14:43	12/16/14 16:00
92229917019	02567-MW8	Water	12/15/14 15:20	12/16/14 16:00
92229917020	02567-MW18	Water	12/15/14 16:55	12/16/14 16:00
92229917021	02567-MW10	Water	12/16/14 08:49	12/16/14 16:00
92229917022	02567-MW9	Water	12/16/14 08:10	12/16/14 16:00
92229917023	Duplicate 2	Water	12/16/14 00:00	12/16/14 16:00
92229917024	02567-SW2	Water	12/16/14 09:12	12/16/14 16:00
92229917025	Field Blank (a)	Water	12/16/14 08:21	12/16/14 16:00
92229917026	Field Blank (b)	Water	12/16/14 15:30	12/16/14 16:00
92229917027	Trip Blank	Water	12/15/14 00:00	12/16/14 16:00
92229917028	02567-MW11	Water	12/16/14 10:15	12/16/14 16:00

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Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92229917

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92229917001	02567-MW4	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917002	02567-MW21	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917003	02567-MW22	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917004	02567-MW3	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917005	02567-TW2	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917006	02567-MW19	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917007	02567-WSW1	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917008	02567-MW16	EPA 8011	JMC	2	PASI-C
		EPA 8260	JDW1	18	PASI-C
92229917009	02567-MW14	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917010	02567-MW15	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917011	02567-MW5	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917012	02567-TW1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917013	02567-MW6	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917014	02567-MW20	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917015	02567-MW7	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917016	Duplicate 1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917017	02567-SW1	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917018	02567-MW2	EPA 8011	JMC	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92229917019	02567-MW8	EPA 8011	JMC	2	PASI-C

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92229917

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	GAW	18	PASI-C
92229917020	02567-MW18	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917021	02567-MW10	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917022	02567-MW9	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917023	Duplicate 2	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917024	02567-SW2	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917025	Field Blank (a)	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917026	Field Blank (b)	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92229917027	Trip Blank	EPA 8260	GAW	18	PASI-C
92229917028	02567-MW11	EPA 8011	JMC	2	PASI-C
		EPA 8260	GAW	18	PASI-C

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Huntersville, NC 28078
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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW4 **Lab ID: 92229917001** Collected: 12/15/14 11:55 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:04	12/18/14 00:17	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	67	%	60-140		1	12/17/14 16:04	12/18/14 00:17	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 14:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 14:49	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 14:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 14:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 14:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 14:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 14:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 14:49	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 14:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 14:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 14:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 14:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 14:49	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 14:49	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 14:49	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		1		12/19/14 14:49	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		12/19/14 14:49	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 14:49	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW21 **Lab ID: 92229917002** Collected: 12/15/14 12:50 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:04	12/18/14 00:37	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	70	%	60-140		1	12/17/14 16:04	12/18/14 00:37	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 15:06	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 15:06	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 15:06	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 15:06	624-95-3	
tert-Butyl Alcohol	**252**	ug/L	100	57.7	1		12/19/14 15:06	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 15:06	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 15:06	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 15:06	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 15:06	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 15:06	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 15:06	637-92-3	
Methyl-tert-butyl ether	**2.8J**	ug/L	5.0	1.7	1		12/19/14 15:06	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 15:06	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 15:06	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 15:06	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		12/19/14 15:06	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		12/19/14 15:06	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 15:06	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW22 **Lab ID: 92229917003** Collected: 12/15/14 13:40 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	12/18/14 17:50	12/19/14 01:58	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	85	%	60-140		1	12/18/14 17:50	12/19/14 01:58	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 15:23	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 15:23	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 15:23	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 15:23	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 15:23	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 15:23	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 15:23	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 15:23	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 15:23	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 15:23	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 15:23	637-92-3	
Methyl-tert-butyl ether	**2.0J**	ug/L	5.0	1.7	1		12/19/14 15:23	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 15:23	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 15:23	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 15:23	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		12/19/14 15:23	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		12/19/14 15:23	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		12/19/14 15:23	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW3 **Lab ID: 92229917004** Collected: 12/15/14 14:30 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/18/14 17:50	12/19/14 02:18	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	93	%	60-140		1	12/18/14 17:50	12/19/14 02:18	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 15:40	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 15:40	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 15:40	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 15:40	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 15:40	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 15:40	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 15:40	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 15:40	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 15:40	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 15:40	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 15:40	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 15:40	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 15:40	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 15:40	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 15:40	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		12/19/14 15:40	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		12/19/14 15:40	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		12/19/14 15:40	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-TW2 **Lab ID: 92229917005** Collected: 12/15/14 15:25 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/17/14 16:05	12/18/14 01:37	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	69	%	60-140		1	12/17/14 16:05	12/18/14 01:37	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 16:14	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 16:14	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 16:14	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 16:14	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 16:14	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 16:14	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 16:14	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:14	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 16:14	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 16:14	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 16:14	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:14	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 16:14	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 16:14	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 16:14	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		12/19/14 16:14	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		12/19/14 16:14	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		12/19/14 16:14	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW19 **Lab ID: 92229917006** Collected: 12/15/14 16:40 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/17/14 16:05	12/18/14 01:57	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	64	%	60-140		1	12/17/14 16:05	12/18/14 01:57	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 16:31	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 16:31	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 16:31	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 16:31	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 16:31	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 16:31	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 16:31	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:31	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 16:31	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 16:31	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 16:31	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:31	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 16:31	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 16:31	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 16:31	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		12/19/14 16:31	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		1		12/19/14 16:31	17060-07-0	
Toluene-d8 (S)	97	%	70-130		1		12/19/14 16:31	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-WSW1 **Lab ID: 92229917007** Collected: 12/15/14 17:12 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/17/14 16:05	12/18/14 02:17	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	81	%	60-140		1	12/17/14 16:05	12/18/14 02:17	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 16:48	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 16:48	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 16:48	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 16:48	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 16:48	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 16:48	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 16:48	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:48	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 16:48	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 16:48	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 16:48	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 16:48	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 16:48	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 16:48	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 16:48	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		12/19/14 16:48	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		12/19/14 16:48	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 16:48	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW16 **Lab ID: 92229917008** Collected: 12/16/14 08:00 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/18/14 17:50	12/19/14 02:38	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	90	%	60-140		1	12/18/14 17:50	12/19/14 02:38	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	200	154	2		12/19/14 14:32	75-85-4	
tert-Amylmethyl ether	ND	ug/L	20.0	6.8	2		12/19/14 14:32	994-05-8	
Benzene	ND	ug/L	10.0	3.4	2		12/19/14 14:32	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	200	64.2	2		12/19/14 14:32	624-95-3	
tert-Butyl Alcohol	**601**	ug/L	200	115	2		12/19/14 14:32	75-65-0	
tert-Butyl Formate	ND	ug/L	100	14.6	2		12/19/14 14:32	762-75-4	
1,2-Dichloroethane	ND	ug/L	10.0	3.6	2		12/19/14 14:32	107-06-2	
Diisopropyl ether	ND	ug/L	10.0	3.4	2		12/19/14 14:32	108-20-3	
Ethanol	ND	ug/L	400	276	2		12/19/14 14:32	64-17-5	
Ethylbenzene	ND	ug/L	10.0	3.2	2		12/19/14 14:32	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	20.0	7.2	2		12/19/14 14:32	637-92-3	
Methyl-tert-butyl ether	**8.5J**	ug/L	10.0	3.4	2		12/19/14 14:32	1634-04-4	
Naphthalene	ND	ug/L	10.0	4.0	2		12/19/14 14:32	91-20-3	
Toluene	ND	ug/L	10.0	3.2	2		12/19/14 14:32	108-88-3	
Xylene (Total)	ND	ug/L	20.0	5.4	2		12/19/14 14:32	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		2		12/19/14 14:32	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		2		12/19/14 14:32	17060-07-0	
Toluene-d8 (S)	98	%	70-130		2		12/19/14 14:32	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW14 **Lab ID: 92229917009** Collected: 12/16/14 09:00 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:05	12/18/14 02:57	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	83	%	60-140		1	12/17/14 16:05	12/18/14 02:57	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 11:39	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 11:39	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 11:39	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 11:39	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 11:39	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 11:39	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 11:39	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:39	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 11:39	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 11:39	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 11:39	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:39	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 11:39	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 11:39	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 11:39	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		1		12/19/14 11:39	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		12/19/14 11:39	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 11:39	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW15 **Lab ID: 92229917010** Collected: 12/16/14 09:25 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/17/14 16:05	12/18/14 03:17	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	76	%	60-140		1	12/17/14 16:05	12/18/14 03:17	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 11:56	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 11:56	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 11:56	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 11:56	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 11:56	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 11:56	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 11:56	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:56	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 11:56	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 11:56	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 11:56	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:56	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 11:56	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 11:56	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 11:56	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		1		12/19/14 11:56	460-00-4	
1,2-Dichloroethane-d4 (S)	111	%	70-130		1		12/19/14 11:56	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 11:56	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW5 **Lab ID: 92229917011** Collected: 12/16/14 10:20 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/18/14 17:50	12/19/14 02:58	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	100	%	60-140		1	12/18/14 17:50	12/19/14 02:58	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 13:02	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 13:02	994-05-8	
Benzene	**68.9**	ug/L	5.0	1.7	1		12/19/14 13:02	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 13:02	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 13:02	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 13:02	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 13:02	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 13:02	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 13:02	64-17-5	
Ethylbenzene	**93.9**	ug/L	5.0	1.6	1		12/19/14 13:02	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 13:02	637-92-3	
Methyl-tert-butyl ether	**6.7**	ug/L	5.0	1.7	1		12/19/14 13:02	1634-04-4	
Naphthalene	**40.8**	ug/L	5.0	2.0	1		12/19/14 13:02	91-20-3	
Toluene	**54.2**	ug/L	5.0	1.6	1		12/19/14 13:02	108-88-3	
Xylene (Total)	**522**	ug/L	10.0	2.7	1		12/19/14 13:02	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		12/19/14 13:02	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		12/19/14 13:02	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		12/19/14 13:02	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-TW1 **Lab ID: 92229917012** Collected: 12/16/14 11:15 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/18/14 17:50	12/19/14 03:18	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	12/18/14 17:50	12/19/14 03:18	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 12:12	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 12:12	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 12:12	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 12:12	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 12:12	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 12:12	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 12:12	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:12	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 12:12	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 12:12	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 12:12	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:12	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 12:12	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 12:12	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 12:12	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		1		12/19/14 12:12	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	70-130		1		12/19/14 12:12	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		12/19/14 12:12	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW6 **Lab ID: 92229917013** Collected: 12/15/14 11:54 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:05	12/18/14 04:16	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	65	%	60-140		1	12/17/14 16:05	12/18/14 04:16	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	5000	3840	50		12/19/14 13:35	75-85-4	
tert-Amylmethyl ether	ND	ug/L	500	170	50		12/19/14 13:35	994-05-8	
Benzene	**4450**	ug/L	250	85.0	50		12/19/14 13:35	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	5000	1600	50		12/19/14 13:35	624-95-3	
tert-Butyl Alcohol	**2900J**	ug/L	5000	2880	50		12/19/14 13:35	75-65-0	
tert-Butyl Formate	ND	ug/L	2500	365	50		12/19/14 13:35	762-75-4	
1,2-Dichloroethane	ND	ug/L	250	90.0	50		12/19/14 13:35	107-06-2	
Diisopropyl ether	ND	ug/L	250	85.0	50		12/19/14 13:35	108-20-3	
Ethanol	ND	ug/L	10000	6890	50		12/19/14 13:35	64-17-5	
Ethylbenzene	**2260**	ug/L	250	80.0	50		12/19/14 13:35	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	500	180	50		12/19/14 13:35	637-92-3	
Methyl-tert-butyl ether	**633**	ug/L	250	85.0	50		12/19/14 13:35	1634-04-4	
Naphthalene	**601**	ug/L	250	100	50		12/19/14 13:35	91-20-3	
Toluene	**1190**	ug/L	250	80.0	50		12/19/14 13:35	108-88-3	
Xylene (Total)	**4070**	ug/L	500	135	50		12/19/14 13:35	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		50		12/19/14 13:35	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130		50		12/19/14 13:35	17060-07-0	
Toluene-d8 (S)	98	%	70-130		50		12/19/14 13:35	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW20 **Lab ID: 92229917014** Collected: 12/15/14 12:35 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	12/17/14 16:08	12/18/14 04:36	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	12/17/14 16:08	12/18/14 04:36	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**19700**	ug/L	10000	7680	100		12/19/14 13:52	75-85-4	
tert-Amylmethyl ether	ND	ug/L	1000	340	100		12/19/14 13:52	994-05-8	
Benzene	ND	ug/L	500	170	100		12/19/14 13:52	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	10000	3210	100		12/19/14 13:52	624-95-3	
tert-Butyl Alcohol	**33000**	ug/L	10000	5770	100		12/19/14 13:52	75-65-0	
tert-Butyl Formate	ND	ug/L	5000	730	100		12/19/14 13:52	762-75-4	
1,2-Dichloroethane	ND	ug/L	500	180	100		12/19/14 13:52	107-06-2	
Diisopropyl ether	ND	ug/L	500	170	100		12/19/14 13:52	108-20-3	
Ethanol	ND	ug/L	20000	13800	100		12/19/14 13:52	64-17-5	
Ethylbenzene	ND	ug/L	500	160	100		12/19/14 13:52	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	1000	360	100		12/19/14 13:52	637-92-3	
Methyl-tert-butyl ether	**8130**	ug/L	500	170	100		12/19/14 13:52	1634-04-4	
Naphthalene	ND	ug/L	500	200	100		12/19/14 13:52	91-20-3	
Toluene	ND	ug/L	500	160	100		12/19/14 13:52	108-88-3	
Xylene (Total)	ND	ug/L	1000	270	100		12/19/14 13:52	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		100		12/19/14 13:52	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		100		12/19/14 13:52	17060-07-0	
Toluene-d8 (S)	98	%	70-130		100		12/19/14 13:52	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW7 **Lab ID: 92229917015** Collected: 12/15/14 13:15 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	12/18/14 17:50	12/19/14 03:38	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	88	%	60-140		1	12/18/14 17:50	12/19/14 03:38	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1700**	ug/L	1000	768	10		12/19/14 14:08	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	34.0	10		12/19/14 14:08	994-05-8	
Benzene	**757**	ug/L	50.0	17.0	10		12/19/14 14:08	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	321	10		12/19/14 14:08	624-95-3	
tert-Butyl Alcohol	**6820**	ug/L	1000	577	10		12/19/14 14:08	75-65-0	
tert-Butyl Formate	ND	ug/L	500	73.0	10		12/19/14 14:08	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	18.0	10		12/19/14 14:08	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	17.0	10		12/19/14 14:08	108-20-3	
Ethanol	ND	ug/L	2000	1380	10		12/19/14 14:08	64-17-5	
Ethylbenzene	**45.6J**	ug/L	50.0	16.0	10		12/19/14 14:08	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	36.0	10		12/19/14 14:08	637-92-3	
Methyl-tert-butyl ether	**319**	ug/L	50.0	17.0	10		12/19/14 14:08	1634-04-4	
Naphthalene	**39.6J**	ug/L	50.0	20.0	10		12/19/14 14:08	91-20-3	
Toluene	ND	ug/L	50.0	16.0	10		12/19/14 14:08	108-88-3	
Xylene (Total)	**182**	ug/L	100	27.0	10		12/19/14 14:08	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		10		12/19/14 14:08	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		10		12/19/14 14:08	17060-07-0	
Toluene-d8 (S)	97	%	70-130		10		12/19/14 14:08	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: Duplicate 1 **Lab ID: 92229917016** Collected: 12/15/14 00:00 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	12/17/14 16:26	12/17/14 21:39	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	98	%	60-140		1	12/17/14 16:26	12/17/14 21:39	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1560**	ug/L	1000	768	10		12/19/14 15:15	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	34.0	10		12/19/14 15:15	994-05-8	
Benzene	**916**	ug/L	50.0	17.0	10		12/19/14 15:15	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	321	10		12/19/14 15:15	624-95-3	
tert-Butyl Alcohol	**6080**	ug/L	1000	577	10		12/19/14 15:15	75-65-0	
tert-Butyl Formate	ND	ug/L	500	73.0	10		12/19/14 15:15	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	18.0	10		12/19/14 15:15	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	17.0	10		12/19/14 15:15	108-20-3	
Ethanol	ND	ug/L	2000	1380	10		12/19/14 15:15	64-17-5	
Ethylbenzene	**64.4**	ug/L	50.0	16.0	10		12/19/14 15:15	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	36.0	10		12/19/14 15:15	637-92-3	
Methyl-tert-butyl ether	**313**	ug/L	50.0	17.0	10		12/19/14 15:15	1634-04-4	
Naphthalene	ND	ug/L	50.0	20.0	10		12/19/14 15:15	91-20-3	
Toluene	**22.8J**	ug/L	50.0	16.0	10		12/19/14 15:15	108-88-3	
Xylene (Total)	**255**	ug/L	100	27.0	10		12/19/14 15:15	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		10		12/19/14 15:15	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		10		12/19/14 15:15	17060-07-0	
Toluene-d8 (S)	98	%	70-130		10		12/19/14 15:15	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-SW1 **Lab ID: 92229917017** Collected: 12/15/14 13:38 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/17/14 21:59	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	103	%	60-140		1	12/17/14 16:26	12/17/14 21:59	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 12:29	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 12:29	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 12:29	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 12:29	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 12:29	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 12:29	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 12:29	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:29	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 12:29	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 12:29	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 12:29	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:29	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 12:29	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 12:29	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 12:29	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		12/19/14 12:29	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		12/19/14 12:29	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		12/19/14 12:29	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW2 **Lab ID: 92229917018** Collected: 12/15/14 14:43 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.023	0.023	1	12/17/14 16:26	12/17/14 22:18	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	12/17/14 16:26	12/17/14 22:18	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 13:19	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 13:19	994-05-8	
Benzene	**3.2J**	ug/L	5.0	1.7	1		12/19/14 13:19	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 13:19	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 13:19	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 13:19	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 13:19	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 13:19	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 13:19	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 13:19	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 13:19	637-92-3	
Methyl-tert-butyl ether	**3.6J**	ug/L	5.0	1.7	1		12/19/14 13:19	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 13:19	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 13:19	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 13:19	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		12/19/14 13:19	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		12/19/14 13:19	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 13:19	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW8 **Lab ID: 92229917019** Collected: 12/15/14 15:20 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/17/14 22:37	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	12/17/14 16:26	12/17/14 22:37	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**203**	ug/L	200	154	2		12/19/14 12:57	75-85-4	
tert-Amylmethyl ether	ND	ug/L	20.0	6.8	2		12/19/14 12:57	994-05-8	
Benzene	ND	ug/L	10.0	3.4	2		12/19/14 12:57	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	200	64.2	2		12/19/14 12:57	624-95-3	
tert-Butyl Alcohol	**353**	ug/L	200	115	2		12/19/14 12:57	75-65-0	
tert-Butyl Formate	ND	ug/L	100	14.6	2		12/19/14 12:57	762-75-4	
1,2-Dichloroethane	ND	ug/L	10.0	3.6	2		12/19/14 12:57	107-06-2	
Diisopropyl ether	ND	ug/L	10.0	3.4	2		12/19/14 12:57	108-20-3	
Ethanol	ND	ug/L	400	276	2		12/19/14 12:57	64-17-5	
Ethylbenzene	ND	ug/L	10.0	3.2	2		12/19/14 12:57	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	20.0	7.2	2		12/19/14 12:57	637-92-3	
Methyl-tert-butyl ether	**156**	ug/L	10.0	3.4	2		12/19/14 12:57	1634-04-4	
Naphthalene	ND	ug/L	10.0	4.0	2		12/19/14 12:57	91-20-3	
Toluene	ND	ug/L	10.0	3.2	2		12/19/14 12:57	108-88-3	
Xylene (Total)	ND	ug/L	20.0	5.4	2		12/19/14 12:57	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		2		12/19/14 12:57	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		2		12/19/14 12:57	17060-07-0	
Toluene-d8 (S)	99	%	70-130		2		12/19/14 12:57	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW18 **Lab ID: 92229917020** Collected: 12/15/14 16:55 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/17/14 22:56	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	94	%	60-140		1	12/17/14 16:26	12/17/14 22:56	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 12:40	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 12:40	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 12:40	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 12:40	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 12:40	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 12:40	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 12:40	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:40	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 12:40	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 12:40	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 12:40	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:40	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 12:40	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 12:40	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 12:40	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	88	%	70-130		1		12/19/14 12:40	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		12/19/14 12:40	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 12:40	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW10 **Lab ID: 92229917021** Collected: 12/16/14 08:49 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/17/14 23:16	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	12/17/14 16:26	12/17/14 23:16	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	25000	19200	250		12/19/14 13:47	75-85-4	
tert-Amylmethyl ether	ND	ug/L	2500	850	250		12/19/14 13:47	994-05-8	
Benzene	**2400**	ug/L	1250	425	250		12/19/14 13:47	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	25000	8020	250		12/19/14 13:47	624-95-3	
tert-Butyl Alcohol	**19300J**	ug/L	25000	14400	250		12/19/14 13:47	75-65-0	
tert-Butyl Formate	ND	ug/L	12500	1820	250		12/19/14 13:47	762-75-4	
1,2-Dichloroethane	ND	ug/L	1250	450	250		12/19/14 13:47	107-06-2	
Diisopropyl ether	ND	ug/L	1250	425	250		12/19/14 13:47	108-20-3	
Ethanol	ND	ug/L	50000	34400	250		12/19/14 13:47	64-17-5	
Ethylbenzene	**655J**	ug/L	1250	400	250		12/19/14 13:47	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2500	900	250		12/19/14 13:47	637-92-3	
Methyl-tert-butyl ether	**7850**	ug/L	1250	425	250		12/19/14 13:47	1634-04-4	
Naphthalene	ND	ug/L	1250	500	250		12/19/14 13:47	91-20-3	
Toluene	ND	ug/L	1250	400	250		12/19/14 13:47	108-88-3	
Xylene (Total)	ND	ug/L	2500	675	250		12/19/14 13:47	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		250		12/19/14 13:47	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		250		12/19/14 13:47	17060-07-0	
Toluene-d8 (S)	99	%	70-130		250		12/19/14 13:47	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW9 **Lab ID: 92229917022** Collected: 12/16/14 08:10 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	12/17/14 16:26	12/17/14 23:35	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	86	%	60-140		1	12/17/14 16:26	12/17/14 23:35	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	50000	38400	500		12/19/14 14:04	75-85-4	
tert-Amylmethyl ether	ND	ug/L	5000	1700	500		12/19/14 14:04	994-05-8	
Benzene	**22100**	ug/L	2500	850	500		12/19/14 14:04	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	50000	16000	500		12/19/14 14:04	624-95-3	
tert-Butyl Alcohol	ND	ug/L	50000	28800	500		12/19/14 14:04	75-65-0	
tert-Butyl Formate	ND	ug/L	25000	3650	500		12/19/14 14:04	762-75-4	
1,2-Dichloroethane	ND	ug/L	2500	900	500		12/19/14 14:04	107-06-2	
Diisopropyl ether	ND	ug/L	2500	850	500		12/19/14 14:04	108-20-3	
Ethanol	ND	ug/L	100000	68900	500		12/19/14 14:04	64-17-5	
Ethylbenzene	**3450**	ug/L	2500	800	500		12/19/14 14:04	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	5000	1800	500		12/19/14 14:04	637-92-3	
Methyl-tert-butyl ether	**69700**	ug/L	2500	850	500		12/19/14 14:04	1634-04-4	
Naphthalene	ND	ug/L	2500	1000	500		12/19/14 14:04	91-20-3	
Toluene	**32000**	ug/L	2500	800	500		12/19/14 14:04	108-88-3	
Xylene (Total)	**17900**	ug/L	5000	1350	500		12/19/14 14:04	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	88	%	70-130		500		12/19/14 14:04	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-130		500		12/19/14 14:04	17060-07-0	
Toluene-d8 (S)	98	%	70-130		500		12/19/14 14:04	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: Duplicate 2 **Lab ID: 92229917023** Collected: 12/16/14 00:00 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/17/14 23:54	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	87	%	60-140		1	12/17/14 16:26	12/17/14 23:54	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**35000**	ug/L	5000	3840	50		12/19/14 13:14	75-85-4	
tert-Amylmethyl ether	**330J**	ug/L	500	170	50		12/19/14 13:14	994-05-8	
Benzene	**22400**	ug/L	2500	850	500		12/19/14 15:28	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	5000	1600	50		12/19/14 13:14	624-95-3	
tert-Butyl Alcohol	**12500**	ug/L	5000	2880	50		12/19/14 13:14	75-65-0	
tert-Butyl Formate	ND	ug/L	2500	365	50		12/19/14 13:14	762-75-4	
1,2-Dichloroethane	ND	ug/L	250	90.0	50		12/19/14 13:14	107-06-2	
Diisopropyl ether	ND	ug/L	250	85.0	50		12/19/14 13:14	108-20-3	
Ethanol	ND	ug/L	10000	6890	50		12/19/14 13:14	64-17-5	
Ethylbenzene	**3070**	ug/L	250	80.0	50		12/19/14 13:14	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	500	180	50		12/19/14 13:14	637-92-3	
Methyl-tert-butyl ether	**69700**	ug/L	2500	850	500		12/19/14 15:28	1634-04-4	
Naphthalene	**878**	ug/L	250	100	50		12/19/14 13:14	91-20-3	
Toluene	**31700**	ug/L	2500	800	500		12/19/14 15:28	108-88-3	
Xylene (Total)	**14600**	ug/L	500	135	50		12/19/14 13:14	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		50		12/19/14 13:14	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		50		12/19/14 13:14	17060-07-0	
Toluene-d8 (S)	98	%	70-130		50		12/19/14 13:14	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-SW2 **Lab ID: 92229917024** Collected: 12/16/14 09:12 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/18/14 00:14	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	106	%	60-140		1	12/17/14 16:26	12/18/14 00:14	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 12:24	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 12:24	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 12:24	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 12:24	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 12:24	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 12:24	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 12:24	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:24	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 12:24	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 12:24	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 12:24	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:24	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 12:24	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 12:24	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 12:24	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	87	%	70-130		1		12/19/14 12:24	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		1		12/19/14 12:24	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 12:24	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: Field Blank (a) **Lab ID: 92229917025** Collected: 12/16/14 08:21 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	12/17/14 16:26	12/18/14 00:33	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	12/17/14 16:26	12/18/14 00:33	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 11:33	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 11:33	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 11:33	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 11:33	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 11:33	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 11:33	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 11:33	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:33	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 11:33	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 11:33	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 11:33	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:33	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 11:33	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 11:33	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 11:33	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		1		12/19/14 11:33	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		12/19/14 11:33	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		12/19/14 11:33	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: Field Blank (b) **Lab ID: 92229917026** Collected: 12/16/14 15:30 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/18/14 00:52	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	12/17/14 16:26	12/18/14 00:52	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 11:50	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 11:50	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 11:50	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 11:50	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 11:50	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 11:50	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 11:50	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:50	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 11:50	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 11:50	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 11:50	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 11:50	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 11:50	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 11:50	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 11:50	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	94	%	70-130		1		12/19/14 11:50	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		12/19/14 11:50	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 11:50	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: Trip Blank **Lab ID: 92229917027** Collected: 12/15/14 00:00 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		12/19/14 12:07	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		12/19/14 12:07	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		12/19/14 12:07	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		12/19/14 12:07	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		12/19/14 12:07	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		12/19/14 12:07	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		12/19/14 12:07	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:07	108-20-3	
Ethanol	ND	ug/L	200	138	1		12/19/14 12:07	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		12/19/14 12:07	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		12/19/14 12:07	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		12/19/14 12:07	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		12/19/14 12:07	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		12/19/14 12:07	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		12/19/14 12:07	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	95	%	70-130		1		12/19/14 12:07	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		12/19/14 12:07	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		12/19/14 12:07	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92229917

Sample: 02567-MW11 **Lab ID: 92229917028** Collected: 12/16/14 10:15 Received: 12/16/14 16:00 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	12/17/14 16:26	12/18/14 01:12	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	130	%	60-140		1	12/17/14 16:26	12/18/14 01:12	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	20000	15400	200		12/19/14 13:31	75-85-4	
tert-Amylmethyl ether	ND	ug/L	2000	680	200		12/19/14 13:31	994-05-8	
Benzene	**16100**	ug/L	1000	340	200		12/19/14 13:31	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	6420	200		12/19/14 13:31	624-95-3	
tert-Butyl Alcohol	**15300J**	ug/L	20000	11500	200		12/19/14 13:31	75-65-0	
tert-Butyl Formate	ND	ug/L	10000	1460	200		12/19/14 13:31	762-75-4	
1,2-Dichloroethane	ND	ug/L	1000	360	200		12/19/14 13:31	107-06-2	
Diisopropyl ether	ND	ug/L	1000	340	200		12/19/14 13:31	108-20-3	
Ethanol	ND	ug/L	40000	27600	200		12/19/14 13:31	64-17-5	
Ethylbenzene	**2860**	ug/L	1000	320	200		12/19/14 13:31	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2000	720	200		12/19/14 13:31	637-92-3	
Methyl-tert-butyl ether	**13900**	ug/L	1000	340	200		12/19/14 13:31	1634-04-4	
Naphthalene	**623J**	ug/L	1000	400	200		12/19/14 13:31	91-20-3	
Toluene	**13700**	ug/L	1000	320	200		12/19/14 13:31	108-88-3	
Xylene (Total)	**12100**	ug/L	2000	540	200		12/19/14 13:31	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	88	%	70-130		200		12/19/14 13:31	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		200		12/19/14 13:31	17060-07-0	
Toluene-d8 (S)	97	%	70-130		200		12/19/14 13:31	2037-26-5	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: MSV/29714 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92229917009, 92229917010, 92229917011, 92229917012, 92229917013, 92229917014, 92229917015, 92229917016, 92229917017, 92229917018

METHOD BLANK: 1356236 Matrix: Water
Associated Lab Samples: 92229917009, 92229917010, 92229917011, 92229917012, 92229917013, 92229917014, 92229917015, 92229917016, 92229917017, 92229917018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	12/19/14 11:22	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	12/19/14 11:22	
Benzene	ug/L	ND	5.0	12/19/14 11:22	
Diisopropyl ether	ug/L	ND	5.0	12/19/14 11:22	
Ethanol	ug/L	ND	200	12/19/14 11:22	
Ethyl-tert-butyl ether	ug/L	ND	10.0	12/19/14 11:22	
Ethylbenzene	ug/L	ND	5.0	12/19/14 11:22	
Methyl-tert-butyl ether	ug/L	ND	5.0	12/19/14 11:22	
Naphthalene	ug/L	ND	5.0	12/19/14 11:22	
tert-Amyl Alcohol	ug/L	ND	100	12/19/14 11:22	
tert-Amylmethyl ether	ug/L	ND	10.0	12/19/14 11:22	
tert-Butyl Alcohol	ug/L	ND	100	12/19/14 11:22	
tert-Butyl Formate	ug/L	ND	50.0	12/19/14 11:22	
Toluene	ug/L	ND	5.0	12/19/14 11:22	
Xylene (Total)	ug/L	ND	10.0	12/19/14 11:22	
1,2-Dichloroethane-d4 (S)	%	107	70-130	12/19/14 11:22	
4-Bromofluorobenzene (S)	%	99	70-130	12/19/14 11:22	
Toluene-d8 (S)	%	98	70-130	12/19/14 11:22	

LABORATORY CONTROL SAMPLE: 1356237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	51.8	104	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	797	80	70-130	
Benzene	ug/L	50	52.8	106	70-130	
Diisopropyl ether	ug/L	50	54.0	108	70-130	
Ethanol	ug/L	2000	2220	111	70-130	
Ethyl-tert-butyl ether	ug/L	100	121	121	70-130	
Ethylbenzene	ug/L	50	50.6	101	70-130	
Methyl-tert-butyl ether	ug/L	50	51.2	102	70-130	
Naphthalene	ug/L	50	49.7	99	70-130	
tert-Amyl Alcohol	ug/L	1000	868	87	70-130	
tert-Amylmethyl ether	ug/L	100	105	105	70-130	
tert-Butyl Alcohol	ug/L	500	529	106	70-130	
tert-Butyl Formate	ug/L	400	431	108	70-130	
Toluene	ug/L	50	50.8	102	70-130	
Xylene (Total)	ug/L	150	157	105	70-130	
1,2-Dichloroethane-d4 (S)	%			101	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

LABORATORY CONTROL SAMPLE: 1356237

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 1356238

Parameter	Units	92229917010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	19.9	100	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	311	78	70-130	
Benzene	ug/L	ND	20	21.0	105	70-130	
Diisopropyl ether	ug/L	ND	20	20.7	103	70-130	
Ethanol	ug/L	ND	800	700	88	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	46.3	116	70-130	
Ethylbenzene	ug/L	ND	20	20.1	100	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.4	97	70-130	
Naphthalene	ug/L	ND	20	17.0	85	70-130	
tert-Amyl Alcohol	ug/L	ND	400	326	81	70-130	
tert-Amylmethyl ether	ug/L	ND	40	38.7	97	70-130	
tert-Butyl Alcohol	ug/L	ND	200	266	133	70-130	M0
tert-Butyl Formate	ug/L	ND	160	12.3J	8	70-130	P5
Toluene	ug/L	ND	20	19.8	99	70-130	
1,2-Dichloroethane-d4 (S)	%				105	70-130	
4-Bromofluorobenzene (S)	%				101	70-130	
Toluene-d8 (S)	%				98	70-130	

SAMPLE DUPLICATE: 1356239

Parameter	Units	92229917012 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	113	114	1		
4-Bromofluorobenzene (S)	%	104	104	0		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

SAMPLE DUPLICATE: 1356239

Parameter	Units	92229917012 Result	Dup Result	RPD	Max RPD	Qualifiers
Toluene-d8 (S)	%	99	98	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: MSV/29715 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92229917019, 92229917020, 92229917021, 92229917022, 92229917023, 92229917024, 92229917025, 92229917026, 92229917027, 92229917028

METHOD BLANK: 1356256 Matrix: Water
Associated Lab Samples: 92229917019, 92229917020, 92229917021, 92229917022, 92229917023, 92229917024, 92229917025, 92229917026, 92229917027, 92229917028

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	12/19/14 03:12	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	12/19/14 03:12	
Benzene	ug/L	ND	5.0	12/19/14 03:12	
Diisopropyl ether	ug/L	ND	5.0	12/19/14 03:12	
Ethanol	ug/L	ND	200	12/19/14 03:12	
Ethyl-tert-butyl ether	ug/L	ND	10.0	12/19/14 03:12	
Ethylbenzene	ug/L	ND	5.0	12/19/14 03:12	
Methyl-tert-butyl ether	ug/L	ND	5.0	12/19/14 03:12	
Naphthalene	ug/L	ND	5.0	12/19/14 03:12	
tert-Amyl Alcohol	ug/L	ND	100	12/19/14 03:12	
tert-Amylmethyl ether	ug/L	ND	10.0	12/19/14 03:12	
tert-Butyl Alcohol	ug/L	ND	100	12/19/14 03:12	
tert-Butyl Formate	ug/L	ND	50.0	12/19/14 03:12	
Toluene	ug/L	ND	5.0	12/19/14 03:12	
Xylene (Total)	ug/L	ND	10.0	12/19/14 03:12	
1,2-Dichloroethane-d4 (S)	%	98	70-130	12/19/14 03:12	
4-Bromofluorobenzene (S)	%	96	70-130	12/19/14 03:12	
Toluene-d8 (S)	%	96	70-130	12/19/14 03:12	

LABORATORY CONTROL SAMPLE: 1356257

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	55.1	110	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1020	102	70-130	
Benzene	ug/L	50	53.6	107	70-130	
Diisopropyl ether	ug/L	50	51.6	103	70-130	
Ethanol	ug/L	2000	1910	96	70-130	
Ethyl-tert-butyl ether	ug/L	100	116	116	70-130	
Ethylbenzene	ug/L	50	51.6	103	70-130	
Methyl-tert-butyl ether	ug/L	50	52.1	104	70-130	
Naphthalene	ug/L	50	53.4	107	70-130	
tert-Amyl Alcohol	ug/L	1000	1060	106	70-130	
tert-Amylmethyl ether	ug/L	100	106	106	70-130	
tert-Butyl Alcohol	ug/L	500	545	109	70-130	
tert-Butyl Formate	ug/L	400	414	104	70-130	
Toluene	ug/L	50	52.7	105	70-130	
Xylene (Total)	ug/L	150	151	101	70-130	
1,2-Dichloroethane-d4 (S)	%			101	70-130	

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(704)875-9092

QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

LABORATORY CONTROL SAMPLE: 1356257

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			96	70-130	
Toluene-d8 (S)	%			100	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: MSV/29718 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92229917001, 92229917002, 92229917003, 92229917004, 92229917005, 92229917006, 92229917007, 92229917008

METHOD BLANK: 1356288 Matrix: Water
Associated Lab Samples: 92229917001, 92229917002, 92229917003, 92229917004, 92229917005, 92229917006, 92229917007, 92229917008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	12/19/14 14:15	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	12/19/14 14:15	
Benzene	ug/L	ND	5.0	12/19/14 14:15	
Diisopropyl ether	ug/L	ND	5.0	12/19/14 14:15	
Ethanol	ug/L	ND	200	12/19/14 14:15	
Ethyl-tert-butyl ether	ug/L	ND	10.0	12/19/14 14:15	
Ethylbenzene	ug/L	ND	5.0	12/19/14 14:15	
Methyl-tert-butyl ether	ug/L	ND	5.0	12/19/14 14:15	
Naphthalene	ug/L	ND	5.0	12/19/14 14:15	
tert-Amyl Alcohol	ug/L	ND	100	12/19/14 14:15	
tert-Amylmethyl ether	ug/L	ND	10.0	12/19/14 14:15	
tert-Butyl Alcohol	ug/L	ND	100	12/19/14 14:15	
tert-Butyl Formate	ug/L	ND	50.0	12/19/14 14:15	
Toluene	ug/L	ND	5.0	12/19/14 14:15	
Xylene (Total)	ug/L	ND	10.0	12/19/14 14:15	
1,2-Dichloroethane-d4 (S)	%	99	70-130	12/19/14 14:15	
4-Bromofluorobenzene (S)	%	101	70-130	12/19/14 14:15	
Toluene-d8 (S)	%	99	70-130	12/19/14 14:15	

LABORATORY CONTROL SAMPLE: 1356289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	48.1	96	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	857	86	70-130	
Benzene	ug/L	50	52.0	104	70-130	
Diisopropyl ether	ug/L	50	51.7	103	70-130	
Ethanol	ug/L	2000	1640	82	70-130	
Ethyl-tert-butyl ether	ug/L	100	117	117	70-130	
Ethylbenzene	ug/L	50	50.5	101	70-130	
Methyl-tert-butyl ether	ug/L	50	51.4	103	70-130	
Naphthalene	ug/L	50	55.3	111	70-130	
tert-Amyl Alcohol	ug/L	1000	890	89	70-130	
tert-Amylmethyl ether	ug/L	100	105	105	70-130	
tert-Butyl Alcohol	ug/L	500	509	102	70-130	
tert-Butyl Formate	ug/L	400	405	101	70-130	
Toluene	ug/L	50	51.7	103	70-130	
Xylene (Total)	ug/L	150	151	101	70-130	
1,2-Dichloroethane-d4 (S)	%			92	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

LABORATORY CONTROL SAMPLE: 1356289

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 1356291

Parameter	Units	92229917007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	19.8	99	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	408	102	70-130	
Benzene	ug/L	ND	20	23.0	115	70-130	
Diisopropyl ether	ug/L	ND	20	20.7	104	70-130	
Ethanol	ug/L	ND	800	879	110	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	47.8	120	70-130	
Ethylbenzene	ug/L	ND	20	21.9	110	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	20.8	104	70-130	
Naphthalene	ug/L	ND	20	23.8	119	70-130	
tert-Amyl Alcohol	ug/L	ND	400	423	106	70-130	
tert-Amylmethyl ether	ug/L	ND	40	43.2	108	70-130	
tert-Butyl Alcohol	ug/L	ND	200	253	127	70-130	
tert-Butyl Formate	ug/L	ND	160	140	88	70-130	
Toluene	ug/L	ND	20	22.0	110	70-130	
1,2-Dichloroethane-d4 (S)	%				92	70-130	
4-Bromofluorobenzene (S)	%				105	70-130	
Toluene-d8 (S)	%				101	70-130	

SAMPLE DUPLICATE: 1356290

Parameter	Units	92229917004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	101	101	1		
4-Bromofluorobenzene (S)	%	103	103	0		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

SAMPLE DUPLICATE: 1356290

Parameter	Units	92229917004 Result	Dup Result	RPD	Max RPD	Qualifiers
Toluene-d8 (S)	%	99	99	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: OEXT/31755 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92229917001, 92229917002, 92229917005, 92229917006, 92229917007, 92229917009, 92229917010, 92229917013, 92229917014

METHOD BLANK: 1353956 Matrix: Water
Associated Lab Samples: 92229917001, 92229917002, 92229917005, 92229917006, 92229917007, 92229917009, 92229917010, 92229917013, 92229917014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	12/17/14 20:35	
1-Chloro-2-bromopropane (S)	%	89	60-140	12/17/14 20:35	

LABORATORY CONTROL SAMPLE & LCSD: 1353957 1353958

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.27	0.25	96	86	60-140	8	20	
1-Chloro-2-bromopropane (S)	%				97	90	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1353959 1353960

Parameter	Units	92229774001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.25	0.24	88	84	60-140	5	20	
1-Chloro-2-bromopropane (S)	%						91	89	60-140			

SAMPLE DUPLICATE: 1353961

Parameter	Units	92229774002 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	91	83	8		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: OEXT/31756 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92229917016, 92229917017, 92229917018, 92229917019, 92229917020, 92229917021, 92229917022, 92229917023, 92229917024, 92229917025, 92229917026, 92229917028

METHOD BLANK: 1353964 Matrix: Water
Associated Lab Samples: 92229917016, 92229917017, 92229917018, 92229917019, 92229917020, 92229917021, 92229917022, 92229917023, 92229917024, 92229917025, 92229917026, 92229917028

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	12/17/14 20:41	
1-Chloro-2-bromopropane (S)	%	105	60-140	12/17/14 20:41	

LABORATORY CONTROL SAMPLE & LCSD: 1353966 1353967

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.29	0.30	102	104	60-140	4	20	
1-Chloro-2-bromopropane (S)	%				99	102	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1353968 1353969

Parameter	Units	92229654007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.28	0.28	98	100	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						96	98	60-140			

SAMPLE DUPLICATE: 1353970

Parameter	Units	92229654008 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	94	103	9		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92229917

QC Batch: OEXT/31799 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92229917003, 92229917004, 92229917008, 92229917011, 92229917012, 92229917015

METHOD BLANK: 1355335 Matrix: Water
Associated Lab Samples: 92229917003, 92229917004, 92229917008, 92229917011, 92229917012, 92229917015

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	12/18/14 23:39	
1-Chloro-2-bromopropane (S)	%	93	60-140	12/18/14 23:39	

LABORATORY CONTROL SAMPLE & LCSD: 1355336 1355337

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.25	0.27	90	94	60-140	5	20	
1-Chloro-2-bromopropane (S)	%				90	99	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1355338 1355339

Parameter	Units	92230198015 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.25	0.26	88	92	60-140	4	20	
1-Chloro-2-bromopropane (S)	%						91	94	60-140			

SAMPLE DUPLICATE: 1355340

Parameter	Units	92230198016 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	92	85	8		

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QUALIFIERS

Project: Rhodesway North
Pace Project No.: 92229917

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North
Pace Project No.: 92229917

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92229917001	02567-MW4	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917002	02567-MW21	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917003	02567-MW22	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917004	02567-MW3	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917005	02567-TW2	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917006	02567-MW19	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917007	02567-WSW1	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917008	02567-MW16	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917009	02567-MW14	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917010	02567-MW15	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917011	02567-MW5	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917012	02567-TW1	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917013	02567-MW6	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917014	02567-MW20	EPA 8011	OEXT/31755	EPA 8011	GCSV/19833
92229917015	02567-MW7	EPA 8011	OEXT/31799	EPA 8011	GCSV/19848
92229917016	Duplicate 1	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917017	02567-SW1	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917018	02567-MW2	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917019	02567-MW8	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917020	02567-MW18	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917021	02567-MW10	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917022	02567-MW9	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917023	Duplicate 2	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917024	02567-SW2	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917025	Field Blank (a)	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917026	Field Blank (b)	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917028	02567-MW11	EPA 8011	OEXT/31756	EPA 8011	GCSV/19834
92229917001	02567-MW4	EPA 8260	MSV/29718		
92229917002	02567-MW21	EPA 8260	MSV/29718		
92229917003	02567-MW22	EPA 8260	MSV/29718		
92229917004	02567-MW3	EPA 8260	MSV/29718		
92229917005	02567-TW2	EPA 8260	MSV/29718		
92229917006	02567-MW19	EPA 8260	MSV/29718		
92229917007	02567-WSW1	EPA 8260	MSV/29718		
92229917008	02567-MW16	EPA 8260	MSV/29718		
92229917009	02567-MW14	EPA 8260	MSV/29714		
92229917010	02567-MW15	EPA 8260	MSV/29714		
92229917011	02567-MW5	EPA 8260	MSV/29714		
92229917012	02567-TW1	EPA 8260	MSV/29714		
92229917013	02567-MW6	EPA 8260	MSV/29714		
92229917014	02567-MW20	EPA 8260	MSV/29714		
92229917015	02567-MW7	EPA 8260	MSV/29714		
92229917016	Duplicate 1	EPA 8260	MSV/29714		
92229917017	02567-SW1	EPA 8260	MSV/29714		

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North
Pace Project No.: 92229917

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92229917018	**02567-MW2**	EPA 8260	MSV/29714		
92229917019	**02567-MW8**	EPA 8260	MSV/29715		
92229917020	**02567-MW18**	EPA 8260	MSV/29715		
92229917021	**02567-MW10**	EPA 8260	MSV/29715		
92229917022	**02567-MW9**	EPA 8260	MSV/29715		
92229917023	**Duplicate 2**	EPA 8260	MSV/29715		
92229917024	**02567-SW2**	EPA 8260	MSV/29715		
92229917025	**Field Blank (a)**	EPA 8260	MSV/29715		
92229917026	**Field Blank (b)**	EPA 8260	MSV/29715		
92229917027	**Trip Blank**	EPA 8260	MSV/29715		
92229917028	**02567-MW11**	EPA 8260	MSV/29715		

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Client Name: Environmental Compliance

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☑ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1401 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Temp Correction Factor T1401 No Correction

Corrected Cooler Temp.: 7.4 °C Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C

Date and Initials of person examining contents: MW 12/16/19

Comments:

Chain of Custody Present:	☑Yes	☐No	☐N/A
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A
Rush Turn Around Time Requested:	☑Yes	☐No	☐N/A
Sufficient Volume:	☑Yes	☐No	☐N/A
Correct Containers Used:	☑Yes	☐No	☐N/A
-Pace Containers Used:	☑Yes	☐No	☐N/A
Containers Intact:	☑Yes	☐No	☐N/A
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A
Sample Labels match COC:	☐Yes	☑No	☐N/A
-Includes date/time/ID/Analysis Matrix: WT			
All containers needing preservation have been checked.	☐Yes	☐No	☑N/A
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☑N/A
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes	☐No	
Samples checked for dechlorination:	☐Yes	☐No	☑N/A
Headspace in VOA Vials (>6mm):	☑Yes	☐No	☐N/A
Trip Blank Present:	☑Yes	☐No	☐N/A
Trip Blank Custody Seals Present	☑Yes	☐No	☐N/A
Pace Trip Blank Lot # (if purchased):			

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12. no filter for Duplicate temp # 12 Sent SW 12/16/19 09:12
13. MW11 @ 10:15 NOT ON COC
14.
15. Init - MW20 - Duplicate 1 - MW5
16. not on COC - WT - HCl 2 Amb H

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: NOELLE FRANZE Date/Time: _____

Comments/ Resolution: 12/19 DUE DATE, ALL SAMPLES NEED 8260 + 8011. RUN MW11 (NZ)

SCURF Review: Date: 12/16/19

SRF Review: Date: 12/18/19

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO#: 92229917

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Environmental Compliance Service Inc	Report To:	Noelle France	Attention:	Accounting
Address:	13504 South Point Blvd Suite F	Copy To:		Company Name:	ECS
	Charlotte, NC 28273			Address:	Agawam MA
Email To:	Nfrance@ecs	Purchase Order #:	14-215788	Pace Quote:	
Phone:	Fax:	Project Name:	Rhodesway North	Pace Project Manager:	julian.boardman@pacelabs.c
Requested Due Date:	Dec 22 2014	Project #:		Pace Profile #:	Nicole Benjamin

Regulatory Agency	State / Location
SCDHEC	SC UST

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: 8260 BTEXMN,12DCA,Oxys	EDB 8011	Trip Blank	Residual Chlorine (Y/N)	72229917
1	02567-MW4			12/15	1155				6										V	V			001
2	02567-MW21			12/15	1250																		002
3	02567-MW22			12/15	1340																		003
4	02567-MW3			12/15	1430																		004
5	02567-TW2			12/15	1525																		005
6	02567-MW19			12/15	1640																		006
7	02567-WSW1			12/15	1717																		007
8	02567-MW16			12/16	0800																		008
9	02567-MW14			12/16	0900																		009
10	02567-MW15			12/16	0925																		010
11	02567-MW5			12/16	1020																		011 (N)
12	02567-TW1			12/16	1115																		012

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Three day Turn		12-16-14	11:39	ECS	12/16/14	11:39	
due 12/22/14		12/16/14	1564	ECS	12/16	3:20	
		12/16	1600	Pace	12/16/14	16:00	4.4

SAMPLER NAME AND SIGNATURE						
PRINT Name of SAMPLER:		DATE Signed:	12-16-14 1630	TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:							

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 1 Of 1

Section A — Required Client Information:

Company:	Environmental Compliance Service Inc
Address:	13504 South Point Blvd Suite F
	Charlotte, NC 28273
Email To:	nfrance@ecsconsulting.com
Phone:	Fax:
Requested Due Date:	Dec 22nd
	3-Day turn time

Section B — Required Project Information:

Report To:	Noelle France
Copy To:	
Purchase Order #:	14 - 215778
Project Name:	Rhodesway North
Project #:	

Section C — Invoice Information:

Attention:	Accounting
Company Name:	ECS
Address:	Agawam, MA
Pace Quote:	
Pace Project Manager:	julian.boardman@pacelabs.c
Pace Profile #:	Nicole Benjamin

Regulatory Agency: SCDHEC UST Section

State / Location: SC

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Y/N	Analyses Test: 8260 BTEXMN,12DCA,Oxys	EDB 8011	Trip Blank	Residual Chlorine (Y/N)	9222917
1	02567-MW6			12/15	1154				6										✓	✓	✓		013
2	02567-MW20			12/15	1235				6										✓	✓	✓		014
3	02567-MW7			12/15	1315				6										✓	✓	✓		015
4	Duplicate 1			12/15					6										✓	✓	✓		016
5	02567-SW1			12/15	1338				6										✓	✓	✓		017
6	02567-MW3			12/15	1443				6										✓	✓	✓		018
7	02567-MW8			12/15	1520				6										✓	✓	✓		019
8	02667-MW18			12/15	1655				6										✓	✓	✓		020
9	02567-MW10			12/16	0849				6										✓	✓	✓		021
10	02567-MW9			12/16	0810				6										✓	✓	✓		022
11	Duplicate 2			12/16					6										✓	✓	✓		023
12	02567-SW2			12/16	0912				6										✓	✓	✓		024

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
MW9 + MW10 strong petro odor	Noelle France	12/16/14	1504	Kurt Blum / ECS	12/16	1520				
	Kurt Blum / ECS	12/16	1600	Jaclyn Wilson Pace	12/16/14	1600	4.6	Y	N/A	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelle France

SIGNATURE of SAMPLER: Noelle France

DATE Signed: 12/16/14

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page : 2 Of 2

Section A — Required Client Information:

Company:	Environmental Compliance Service Inc
Address:	13504 South Point Blvd Suite F
	Charlotte, NC 28273
Email To:	nfrance@ecsconsult
Phone:	Fax:
Requested Due Date:	Dec 22 - 2014

Section B — Required Project Information:

Report To:	Noelle France
Copy To:	
Purchase Order #:	
Project Name:	Rhodesway North
Project #:	

Section C — Invoice Information:

Attention:	Accounting
Company Name:	ECS
Address:	Agawam, MA
Pace Quote:	
Pace Project Manager:	julian.boardman@pacelabs.c
Pace Profile #:	Nicole Benjamin

Regulatory Agency: SCDHEC - UST

State / Location: SC

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	8260 BTEXMN,12DCA,Oxys	EDB 8011	Trip Blank	Residual Chlorine (Y/N)	92229917
1	Field blank			12/16			0821		6										2				025
2	Field blank			12/16			1530		6										2				026
3																							TB - ~~026~~ 027
4																							MW11 - 028
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Noelle France	12/16/14	1504	Kurt Rhi / ECS	12/16	2:20	
	Kurt Rhi ECS	12/16	1600	Jaclyn Wilson Pace	12/16/14	1600	4.4 yes → yes

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Noelle France

SIGNATURE of SAMPLER: Noelle France

DATE Signed: 12/16/14

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Quality Assurance and Quality Control Evaluation
Pace Analytical Services
Rhodesway North

Sample ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)
Field Blank	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR
Trip Blank	12/15/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	N/A	NR
Field Blank	12/16/2014	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR

Note Field blanks collected on separate days, labelled incorrectly on chain of custody.

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)
Duplicate 1	12/15/2014	**916**	22.8 J	64.4	255	**313**	0	0	0	NR
02567-MW7	12/15/2014	**757**	0	45.6 J	182	**319**	**39.6 J**	0	0	NR
Relative Percent Difference		**19.01%**	**NA**	**NA**	**33.41%**	**1.90%**	**NA**	NA	NA	NR
									Average Percent Difference	**10.86%**

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)
Duplicate 2	12/16/2014	**22400**	**31700**	**3070**	**14600**	**69700**	**878**	0	0	NR
02567-MW9	12/16/2014	**22100**	**32000**	**3450**	**17900**	**69700**	0	0	0	NR
Relative Percent Difference		**2.71%**	**1.88%**	**22.03%**	**36.87%**	**0.00%**	**NA**	NA	NA	NR
									Average Percent Difference	**12.70%**

Results in micrograms per liter ug/L
Results that are below the method detection limit were not used in the calclation and were asigned a value of zero.
TB Trip Blank
NA not applicable
NR Analysis not requested
J values estimated concentrations above the adjusted method detection limit and below the reporting limit.

APPENDIX G

Disposal Manifest

A copy of the disposal manifest for IDW generated during this assessment was not available at the time of report preparation. A copy of the disposal manifest will be forwarded to the SCDHEC up on our receipt.

APPENDIX K

Data Verification Checklist

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?			✓
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?			✓
10	Has current use of the site and adjacent land been described?			✓
11	Has the site-specific geology and hydrogeology been described?			✓
12	Has the primary soil type been described?			✓
13	Have field screening results been described?			✓
14	Has a description of the soil sample collection and preservation been detailed?			✓
15	Has the field screening methodology and procedure been detailed?			✓
16	Has the monitoring well installation and development dates been provided?			✓
17	Has the method of well development been detailed?			✓
18	Has justification been provided for the locations of the monitoring wells?			✓
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?			✓
26	Does the report include a brief discussion of the aquifer evaluation and results?			✓
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			✓
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?			✓
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)			✓
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)			✓
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)			✓
47	Have the soil boring/field screening logs been provided? (Appendix D)			✓
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)			✓
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			✓
50	Have the disposal manifests been provided? (Appendix G)		✓	
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			✓
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?
A copy of the disposal manifest will be forwarded to the SCDHEC upon our receipt.

Project Verifier (signature) _____

(print name) David R. Mazorra, PE

Date 12/30/14

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

LAWTON R. SMITH
ROHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

JAN 2 0 2015

UST 26 tech DOCKETING

Re: **Site Specific Work Plan Request**
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC 29488
UST Permit # 02567
Release reported April 14, 2011
Monitoring Report received January 2, 2015
Walterboro County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report. The report indicates the presence of chemicals of concern in the groundwater.

To determine what risk the referenced release may pose to the environment and public health, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, installation of seven recovery wells is requested. Following recovery well installation, one 96-hour AFVR event should be performed on RW-2, MW-12 and MW-17. Thirty (30) days following the AFVR activities a groundwater sampling event as outlined in the UST Quality Assurance Program Plan (QAPP) Revision 2.0 is necessary. All monitoring wells, recovery wells, water supply wells and surface waters associated with the release should be sampled for BTEX, naphthalene, MtBE, 1,2-DCA, 8-Oxygenates, and EDB. All assessment related activities should be conducted in accordance with the UST QAPP and must be conducted in compliance with all applicable regulations. A copy of the Agency's QAPP for the Underground Storage Tank Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/.

Please have your contractor complete and submit the Site Specific Work Plan and Cost Agreement within thirty (30) days of the date of this letter. The Site Specific Work Plan form can be found at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance/. Every component may not be necessary to complete the above scope of work. The State Underground Petroleum Environmental Response Bank (SUPERB) Account allowable cost for each component is included on the Assessment Component Cost Agreement Form. **Please note that technical and financial preapproval from the Agency must be issued before work begins.**

On all correspondence regarding this site, please reference UST Permit #02567. If you have questions or need additional information, feel free to call me at (803) 898-0606.

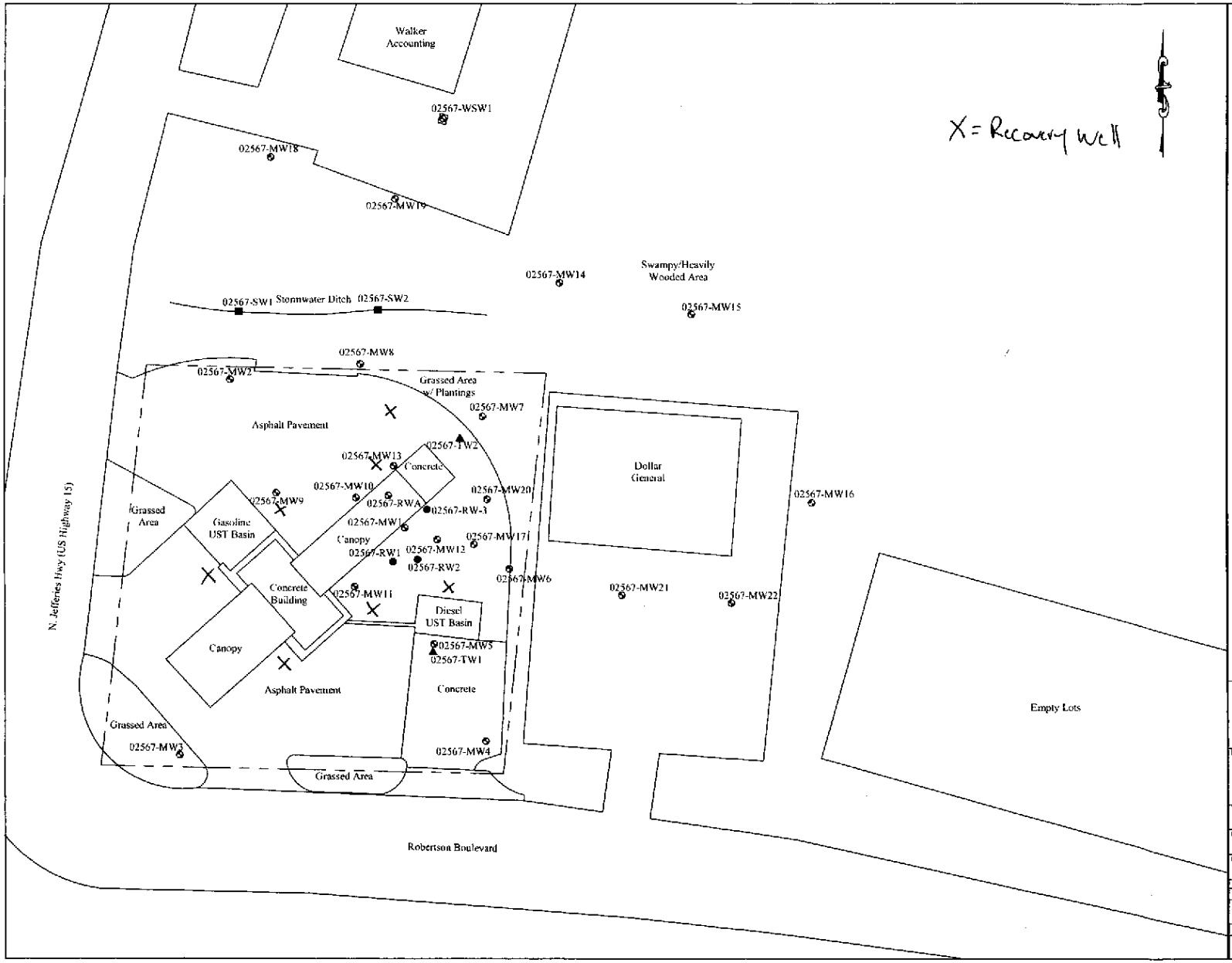
Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Map

cc: Environmental Compliance Services, PO Box 3528, Fort Mill, SC 29708 (w/enc)

Technical File



Legend

02567-SW1	Surface Water Sample Loc.
02567-RW1	Recovery Well
02567-TW1	Deep Monitoring Well
02567-SW1	Shallow Monitoring Well
02567-WSW1	Water Supply Well

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street • Agawam, MA 01001
Phone: 1-800-780-3650 Fax: 413-789-2776

PROJECT: **Rhodesway North**
1400 N. Jefferies Highway
Walterboro, SC

TITLE: **Site Map**

CLIENT: **Rhodes Oil Company**

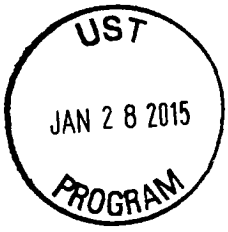
GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	12/23/14	14-215778	2

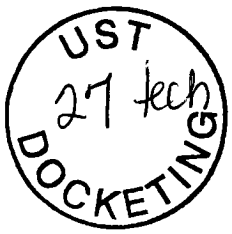
ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com



Mr. John Bryant
UST Management Division
Corrective Action Section
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201

January 23, 2015
ECS Project # 14-215778



Re: Disposal Manifest
UST Permit #02567
CA# 49417

Mr. Bryant:

Enclosed please find the disposal manifest for purge water generated at Rhodesway North (UST Permit #02567). Should you have any questions or require additional information, please do not hesitate to call me at (704) 583-2711 or by email at nfrance@ecsconsult.com.

Sincerely,
ENVIRONMENTAL COMPLIANCE SERVICES, INC.

Noelle A. France
Project Manager

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
			803-957-9175	34804

5. Generator's Name and Mailing Address
Rhodes Oil Company
PO Box 1545
Walterboro, SC
Generator's Phone: ~~803-527-6493~~

Generator's Site Address (if different than mailing address)
Rhodesway North
1400 Jeffries Highway
Walterboro, SC

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name ~~A&D Environmental Services (SC) LLC~~ — U.S. EPA ID Number ~~SCD987598331~~

8. Designated Facility Name and Site Address
A&D Environmental Services, Inc
2718 Uwharrie Road
Archdale, NC 27263
Facility's Phone: ~~336-434-7750~~
U.S. EPA ID Number: NCD986232221

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	NON-HAZARDOUS NON-REGULATED MATERIAL Purge Water	~~03~~ 3	DM	130	G
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
20150005

In Case of Emergency Call: 803-957-9175 A&D (SC) Job #216911
14-215778

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Noelle France
Signature: Noelle France for Rhodes Oil
Month: 1 Day: 15 Year: 15

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgement of Receipt of Materials

Transporter 1 Printed/Typed Name: Brian Buteyage
Signature: Brian Buteyage
Month: 1 Day: 15 Year: 15

Transporter 2 Printed/Typed Name
Signature
Month Day Year

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Travis Clapp
Signature: Travis Clapp
Month: 01 Day: 22 Year: 15

DESIGNATED FACILITY TO GENERATOR

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

Mr. John C. Bryant
Corrective Action Section
Underground Storage Tank Management Division
SCDHEC
2600 Bull Street
Columbia, South Carolina 29201

January 29, 2015
ECS Project #14-215778

Re: Site Specific Work Plan
Rhodesway North
1400 Jeffries Highway
Walterboro, South Carolina
UST Permit #02567

Mr. Bryant:

Enclosed please find the Site Specific Work Plan requested for the referenced site, in your letter dated January 20, 2015. Should you have any questions or require additional information, please do not hesitate to call me at (704) 583-2711 or by email at nfrance@ecsconsult.com.

Sincerely,
ENVIRONMENTAL COMPLIANCE SERVICES, INC.

Noelle A. France
Project Manager

D H E C

PROMOTE PROTECT PROSPER

Site-Specific Work Plan for Approved ACQAP
Underground Storage Tank Management Division

To: Mr. John C. Bryant (SCDHEC Project Manager)

From: Noelle France (Contractor Project Manager)

Contractor: ECS, Inc. UST Contractor Certification Number: _____

Facility Name: Rhodesway North UST Permit #: 02567

Facility Address: 1400 Jeffries Highway, Walterboro, SC

Responsible Party: Rhodes Oil Company Phone: (843) 549-5521

RP Address: P.O. Box 1545, Walterboro, South Carolina 29488

Property Owner (if different): Rhodes Development of Walterboro

Property Owner Address: P.O. Box 1545 Walterboro, South Carolina.

Current Use of Property: Gas station and convenience store

Scope of Work (Please check all that apply)

☐ IGWA ☐ Tier II ☑ Groundwater Sampling ☐ GAC

☐ Tier I ☐ Monitoring Well Installation ☑ Other Recovery well installation and 96-hour AFVR

Analyses (Please check all that apply)

Groundwater/Surface Water:

☑ BTEXNMDCA (8260B) ☐ Lead ☐ BOD ☐ Methane

☑ Oxygenates (8260B) ☐ 8 RCRA Metals ☐ Nitrate ☐ Ethanol

☑ EDB (8011) ☐ TPH ☐ Sulfate ☐ Dissolved Iron

☐ PAH (8270D) ☐ pH ☐ Other _____

Soil:

☐ BTEXN ☐ 8 RCRA Metals ☐ TPH-DRO (3550B/8015B) ☐ Grain Size

☐ PAH ☐ Oil & Grease (9071) ☐ TPH-GRO (5030B/8015B) ☐ TOC

Air:

☐ BTEXN

Sample Collection (Estimate the number of samples of each matrix that are expected to be collected.)

_____ Soil 1 Water Supply Wells _____ Air 3 Field Blank

34 Monitoring Wells 2 Surface Water 2 Duplicate 3 Trip Blank

Field Screening Methodology

Estimate number and total completed depth for each point, and include their proposed locations on the attached map.

# of shallow points proposed: _____ Estimated Footage: _____ feet per point

# of deep points proposed: _____ Estimated Footage: _____ feet per point

Field Screening Methodology: _____

Permanent Monitoring Wells

Estimate number and total completed depth for each well, and include their proposed locations on the attached map.

# of shallow wells: _____ Estimated Footage: _____ feet per point

# of deep wells: _____ Estimated Footage: _____ feet per point

# of recovery wells: 7 Estimated Footage: 13 feet per point

Monitoring Well development method (consistent with SOP): _____

Comments, if warranted:

Recovery wells 02567-RW4 through 02567-RW10 will be installed to a depth of 13 feet with 10 feet of screen.

UST Permit #: 02567 Facility Name: Rhodesway North

Implementation Schedule (Number of calendar days from approval)
Field Work Start-Up: 30 days Field Work Completion: 90 days
Report Submittal: 120 days # of Copies Provided to Property Owners: _____

Aquifer Characterization
Pump Test: ☐ Slug Test: ☐ (Check one and provide explanation below for choice)

Investigation Derived Waste Disposal
Soil: 10 Tons Purge Water: 100 Gallons
Drilling Fluids: Development water 200 Gallons Free-Phase Product: _____ Gallons

Additional Details For This Scope of Work
For example, list wells to be sampled, wells to be abandoned/repaired, well pads/bolts/caps to replace, details of AFVR event, etc.
ECS will install 7 recovery wells to a depth of 13 feet with 10 feet of screen (02567-RW4 through 02567-RW10). Subsequent to the installation of the recovery wells ECS will perform a 96-hour AFVR targeting 02567-RW2, 02567-MW12, and 02567-MW17. Thirty days following completion of the AFVR, groundwater monitoring wells 02567-MW1 through 02567-MW22, 02567-RW1 through RW10, 02567-TW1 and TW2, will be and sampled. One water supply well will be sampled and two surface water samples will be collected from a stormwater ditch on the northern side of the site. The samples will be analyzed for BTEXMN, 1,2 DCA by EPA Method 8260B to include the 8 oxygenates and for EDB by EPA Method 8011. Only the newly installed recovery wells will be purged.

Compliance With Annual Contractor Quality Assurance Plan (ACQAP)
Yes Laboratory as indicated in ACQAP? (Yes/No) If no, indicate laboratory information below.
Name of Laboratory: _____
SCDHEC Certification Number: _____
Name of Laboratory Director: _____

Yes Well Driller as indicated in ACQAO? (Yes/No) If no, indicate driller information below.
Name of Well Driller: _____
SCLLR Certification Number: _____

____ Other variations from ACQAP. Please describe below.

Attachments
1. Attach a copy of the relevant portion of the USGS topographic map showing the site location.
2. Prepare a site base map. This map must be accurately scaled, but does not need to be surveyed. The map must include the following:
   - North Arrow
   - Location of property lines
   - Location of buildings
   - Previous soil sampling locations
   - Previous monitoring well locations
   - Proposed soil boring locations
   - Proposed monitoring well locations
   - Legend with facility name and address, UST permit number, and bar scale
   - Streets or highways (indicate names and numbers)
   - Location of all present and former ASTs and USTs
   - Location of all potential receptors
3. Assessment Component Cost Agreement, SCDHEC Form D-3664

D H E C

PROMOTE PROTECT PROSPER

South Carolina Department of Health and Environmental Control

ASSESSMENT COMPONENT COST AGREEMENT

SOUTH CAROLINA

Department of Health and Environmental Control

Underground Storage Tank Management Division

State Underground Petroleum Environmental Response Bank Account

May 15, 2014

Facility Name: Rhodesway North

UST Permit #: 02567 **Cost Agreement #:** _____

ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL
1. **Plan Preparation**				
A1. Site-specific Work Plan	1	each	$150.00	$150.00
B1. Tax Map		each	$70.00	$0.00
C1. Tier II or Comp. Plan /QAPP Appendix B		each	$250.00	$0.00
2. A1. **Receptor Survey ***		each	$551.00	$0.00
3. **Survey (500 ft x 500 ft)**				
A1. Comprehensive Survey		each	$1,040.00	$0.00
B. Subsurface Geophysical Survey				
1B. < 10 meters below grade		each	$1,300.00	$0.00
2B. > 10 meters below grade		each	$2,310.00	$0.00
C1. Geophysical UST or Drum Survey		each	$910.00	$0.00
4. **Mob/Demob**				
A1. Equipment	1	each	$1,020.00	$1,020.00
B1. Personnel	4	each	$423.00	$1,692.00
C1. Adverse Terrain Vehicle		each	$500.00	$0.00
5. A1. **Soil Borings (hand auger)***		foot	$5.00	$0.00
6. **Soil Borings (requiring equipment, push technology, etc)* or Field Screening (including water ssample, soil sample, soil gas sample, etc.)***				
AA. Standard		per foot	$15.00	$0.00
C1. Fractured Rock		per foot	$20.20	$0.00
7. A1. **Soil Leachability Model**		each	$60.00	$0.00
8. **Abandonment (per foot)***				
A1. 2" diameter or less		per foot	$3.10	$0.00
B1. Greater than 2" to 6" diameter		per foot	$4.50	$0.00
C1. Dug/Bored well (up to 6 feet diameter)		per foot	$15.00	$0.00
9. **Well Installation (per foot)***				
A1. Water Table (hand augered)		per foot	$10.60	$0.00
B1. Water Table (drill rig)		per foot	$38.00	$0.00
CC. Telescoping		per foot	$50.00	$0.00
DD. Rock Drilling		per foot	$58.00	$0.00
E1. 2" Rock Coring		per foot	$30.90	$0.00
G1. Rock Multi-sampling ports/screens		per foot	$33.40	$0.00
HH. Recovery Well (4" diameter)	91	per foot	$45.00	$4,095.00
II. Pushed Pre-packed screen (1.25" dia)		per foot	$15.00	$0.00
J1. Rotosonic (2" diameter)		per foot	$44.00	$0.00
K. Re-develop Existing Well		per foot	$11.00	$0.00
10. **Groundwater Sample Collection / Gauge Depth to Water or Product ***				
A1. Groundwater Purge	7	er well/recept	$60.00	$420.00
B1. Air or Vapors		per recepto	$12.00	$0.00
C1. Water Supply	1	er well/recept	$22.00	$22.00
D1. Groundwater No Purge or Duplicate	31	er well/recept	$28.00	$868.00
E1. Gauge Well only		per well	$7.00	$0.00
F1. Sample Below Product		per well	$12.00	$0.00

G1. Passive Diffusion Bag		each	$26.00		$0.00
H1. Field Blank	3	each	$24.60		$73.80
11. Laboratory Analyses-Groundwater					
A2. BTEXNM+Oxyg's+1,2 DCA+Eth(82	45	per sample	$122.00		$5,490.00
AA1. Lead, Filtered		per sample	$13.80		$0.00
B2. Rush EPA Method 8260B (All of item A.)		per sample	$153.60		$0.00
C2. Trimethal, Butyl, and Isopropyl Benzenes		per sample	$36.40		$0.00
D1. PAH's		per sample	$60.60		$0.00
E1. Lead		per sample	$16.00		$0.00
F1. EDB by EPA 8011	42	per sample	$45.20		$1,898.40
FF1. EDB by EPA Method 8011 Rush		per sample	$68.20		$0.00
G1. 8 RCRA Metals		per sample	$63.40		$0.00
H1. TPH (9070)		per sample	$41.00		$0.00
II. pH		per sample	$5.20		$0.00
J1. BOD		per sample	$20.00		$0.00
PP. Ethanol		per sample	$14.80		$0.00
11. **Analyses-Soil**					
Q1. BTEX + Naphth.		per sample	$64.00		$0.00
R1. PAH's		per sample	$64.04		$0.00
S1. 8 RCRA Metals		per sample	$56.40		$0.00
U1. TPH-DRO (3550C/8015C)		per sample	$40.00		$0.00
V1. TPH- GRO (5030B/8015C)		per sample	$35.96		$0.00
W1. Grain size/hydrometer		per sample	$104.00		$0.00
X1. Total Organic Carbon		per sample	$30.60		$0.00
11. **Analyses-Air**					
Y1. BTEX + Naphthalene		per sample	$216.00		$0.00
11. **Analyses-Free Phase Product**					
Z1. Hydrocarbon Fuel Identification		per sample	$357.00		$0.00
12. **Aquifer Characterization**					
A1. Pumping Test*		per hour	$23.00		$0.00
B1. Slug Test*		per test	$191.00		$0.00
C1. Fractured Rock		per test	$100.00		$0.00
13. A1. **Free Product Recovery Rate Test***		each	$38.00		$0.00
14. **Fate/Transport Modeling**					
A1. Mathematical Model		each	$100.00		$0.00
B1. Computer Model		each	$100.00		$0.00
15. **Risk Evaluation**					
A. Tier I Risk Evaluation		each	$300.00		$0.00
B1. Tier II Risk Evaluation		each	$100.00		$0.00
16. A1. **Subsequent Survey***	1	each	$260.00		$260.00
17. **Disposal (gallons or tons)***					
AA. Wastewater	300	gallon	$0.56		$168.00
BB. Free Product		gallon	$0.50		$0.00
C1. Soil Treatment/Disposal	10	ton	$60.00		$600.00
D1. Drilling fluids		gallon	$0.42		$0.00
18. **Miscellaneous (attach receipts)**					
		each	$0.00		$0.00
		each	$0.00		$0.00
		each	$0.00		$0.00
20. **Tier I Assessment (Use DHEC 3665 form)**		standard			$0.00
21. **IGWA (Use DHEC 3666 form)**		standard			$0.00
22. **Corrective Action (Use DHEC 3667 form)**		PFP Bid			$0.00

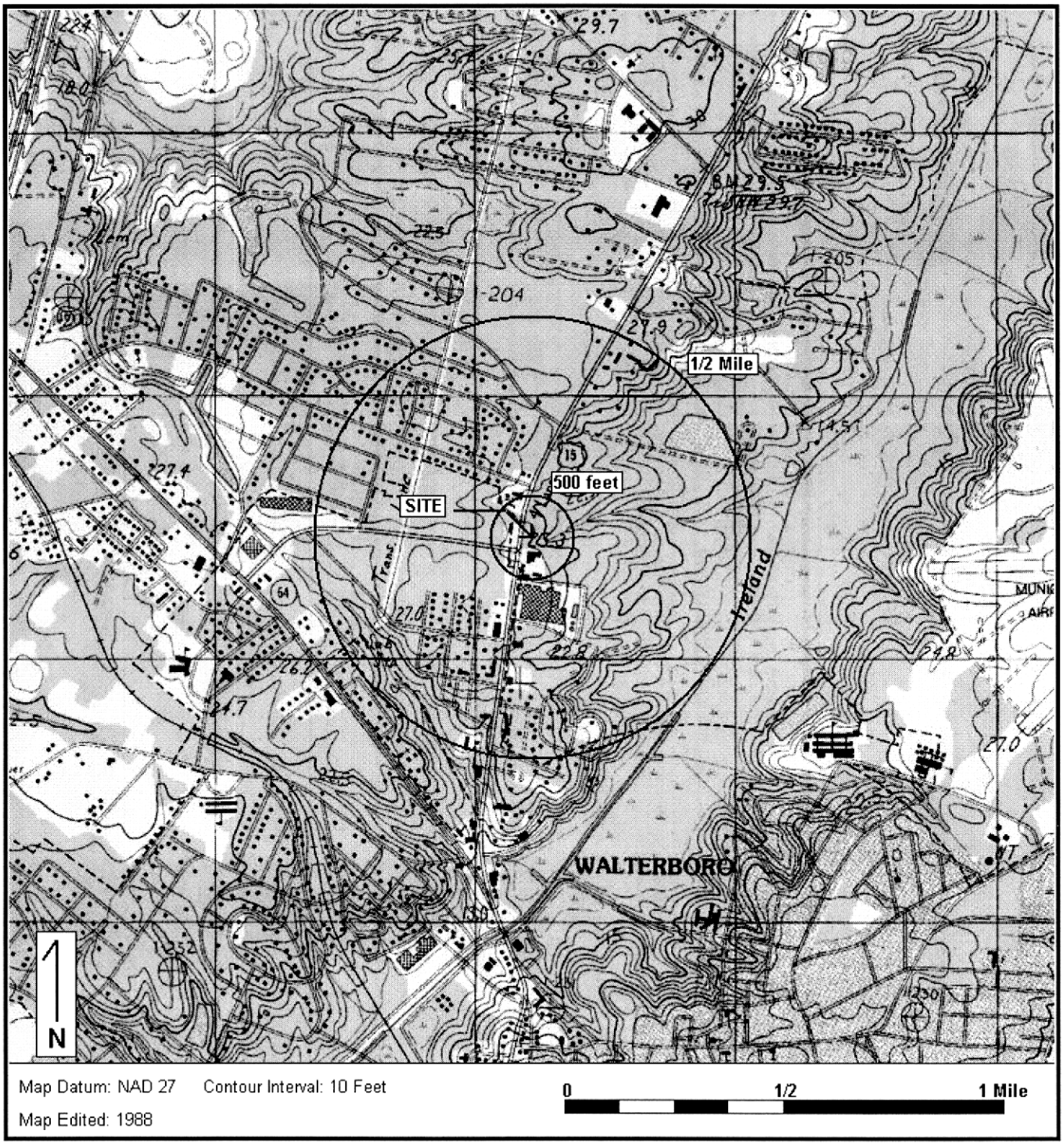
23. **Aggressive Fluid & Vapor Recovery (AFVR)**					
A1. 8-hour Event*		each	$1,375.00		$0.00
AA. 24-hour Event*		each	$3,825.00		$0.00
A3. 48-hour Event*		each	$6,265.00		$0.00
A4. 96-hour Event*	1	each	$12,567.50		$12,567.50
C1. Off-gas Treatment 8 hour		per event	$122.50		$0.00
C2. Off-gas Treatment 24 hour		per event	$241.50		$0.00
C3. Off-gas Treatment 48 hour		per event	$327.00		$0.00
C4. Off-gas Treatment 96 hour	1	per event	$780.00		$780.00
D. Site Reconnaissance	1	each	$203.25		$203.25
E1. Additional Hook-ups		each	$25.75		$0.00
F1. Effluent Disposal	15,000	gallon	$0.44		$6,600.00
G. AFVR Mobilization/Demobilization	1	each	$391.50		$391.50
24. **Granulated Activated Carbon (GAC) filter system installation & service:**					
A1. New GAC System Installation*		each	$1,900.00		$0.00
BB. Refurbished GAC Sys. Install*		each	$900.00		$0.00
C1. Filter replacement/removal*		each	$350.00		$0.00
DD. GAC System removal, cleaning, & refurbishment*		each	$275.00		$0.00
E1. GAC System housing*		each	$250.00		$0.00
F. In-line particulate filter		each	$150.00		$0.00
G1. Additional piping & fittings		foot	$1.50		$0.00
25. **Well Repair**					
A1. Additional Copies of the Report Delivered		each	$50.00		$0.00
B1. Repair 2x2 MW pad*		each	$50.00		$0.00
C1. Repair 4x4 MW pad*		each	$88.00		$0.00
D1. Repair well vault*		each	$118.00		$0.00
F1. Replace well cover bolts		each	$2.60		$0.00
G. Replace locking well cap & lock		each	$15.00		$0.00
H1. Replace/Repair stick-up*		each	$134.00		$0.00
I1. Convert Flush-mount to Stick-up*		each	$150.00		$0.00
J1. Convert Stick-up to Flush-mount*		each	$130.00		$0.00
K1. Replace missing/illegible well ID plate		each	$12.00		$0.00
Report Prep & Project Management	12%	percent	$37,299.45		$4,475.93
TOTAL					$41,775.38

*The appropriate mobilization cost can be added to complete these tasks, as necessary

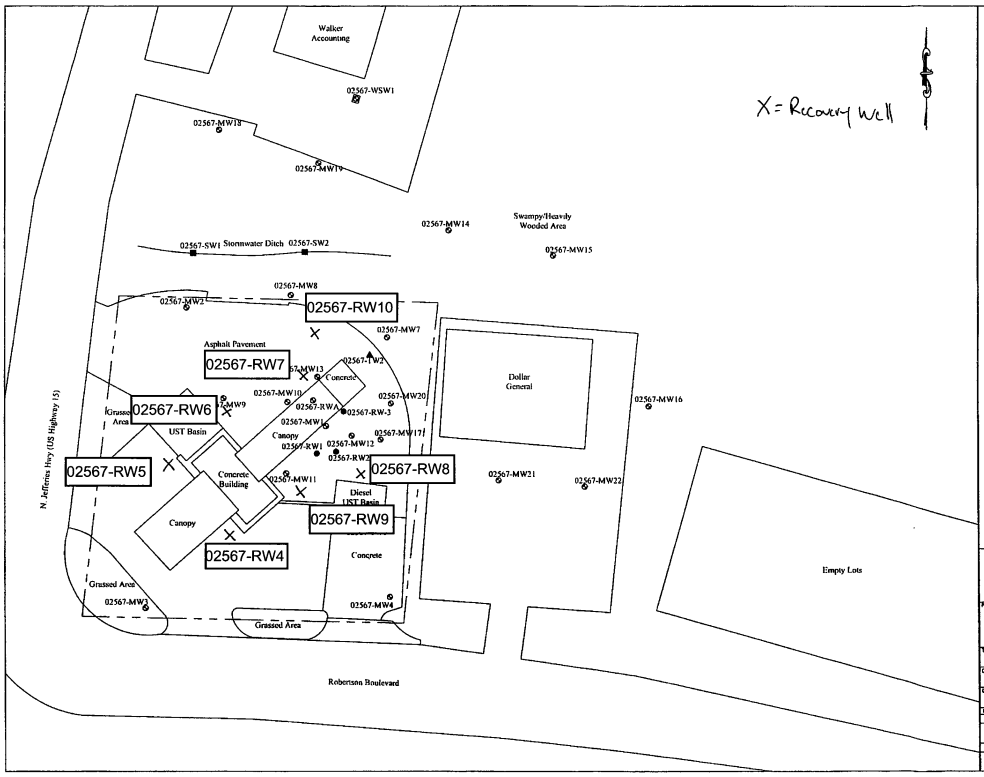
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins



Legend

02567-SW1	Surface Water Sample Loc.
02567-RW1	Recovery Well
02567-TW1	Deep Monitoring Well
02567-SW1	Shallow Monitoring Well
02567-WSW1	Water Supply Well

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs

568 Silver Street • Agawam, MA 01001
Phone: 1-800-788-3630 Fax: 413-786-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: Site Map

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CAPABLE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	12/23/14	14-215778	2

D H E C
PROMOTE PROTECT PROSPER
W. Marshall Taylor Jr., Acting Director
Promoting and protecting the health of the public and the environment

UST 29488 DOCKETING

LAWTON R. SMITH
RHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

FEB 18 2015

Re: **Assessment Directive**
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC 29488
UST Permit # 02567; CA # 49616; UMW # 25841
Release Reported April 14, 2011
SSWP Received January 29, 2015
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced Site Specific Work Plan (SSWP) submitted on your behalf by ECS. The previous assessment work for this release indicates that petroleum Chemicals of Concern (CoC) are present in the soil and groundwater at concentrations that exceed risk-based screening levels. In order to determine the extent of the CoC's, additional assessment, AFVR, and sampling is necessary. All work should be conducted in accordance with the UST QAPP Revision 2.0, and must be conducted in compliance with all applicable regulations. A copy of the Agency Quality Assurance Program Plan (QAPP) Rev. 2.0 for the UST Management Division is available at http://www.dhec.sc.gov/Environment/LW/UST/ReleaseAssessmentClean-up/QualityAssurance.

Assessment activities at the site should begin immediately upon receipt of this letter. Cost agreement # 49616 has been approved for the amount shown on the enclosed cost agreement form for recovery well installation, AFVR, and a comprehensive groundwater sampling event. The necessary monitoring well approval form is enclosed. Recovery well installation should be conducted in the locations described within the referenced SSWP. Groundwater analyses should be conducted for BTEX, Naphthalene, MTBE, Oxygenates, 1,2-DCA, Ethanol, and EDB. Analyses should be in accordance with Appendix E of the QAPP to include duplicate samples, field and trip blanks.

In accordance with the QAPP Rev. 2.0, if any quality assurance problems arise, you must contact the Agency project manager within 24 hours via phone or e-mail. In addition, a discussion of the problem(s) encountered, including quality assurance problems, the actions taken, and the results must be included in the final report submitted to the UST Management Division.

The Assessment Report, contractor checklist (QAPP Appendix K), and invoice are due within 90 days from the date of this letter. The report submitted at the completion of these activities should include the required information outlined in the QAPP. Please note that all applicable South Carolina certification requirements apply to the services and report preparation. All site rehabilitation activities must be performed and submitted by a South Carolina Certified Underground Storage Tank Site Rehabilitation Contractor.

Your contractor can submit an invoice for direct payment from State Underground Petroleum Environmental Response Bank (SUPERB) Account for pre-approved costs. By law, the SUPERB Account cannot compensate any costs that are not pre-approved. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. If the invoice is not submitted within 120 days from the date of this letter, monies allocated to pay this invoice will be uncommitted. This means that the invoice will not be processed for payment until all other committed funds are paid or monies become available.

Please note that Sections 44-2-110(4) and 44-2-130 of the SUPERB Statute state that no costs will be allowed unless prior approval from the Agency is obtained. If for any reason additional tasks will be completed, these additional tasks and the associated cost must be pre-approved by the Division for the cost to be paid. The Agency reserves the authority to pay only for work properly performed and/or technically justified and will only pay rates in accordance with established criteria. Further, the Agency reserves the right to question and/or reject costs if deemed unreasonable and the right to audit project records at any time during the project or after completion of work.

Please note, if unnecessary dilutions are completed resulting in reporting limits of individual CoC in excess of Risk-Based Screening Levels (RBSLs), the data cannot be used. In those cases, the UST Division may deny payment for any non-detect analysis where the reporting limit exceeds the RBSL. The UST Management Division encourages the use of 'J' values as necessary so the appropriate action can be determined for a release.

The Agency grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. The transport and disposal must be conducted in accordance with the QAPP. If the CoC concentrations based on laboratory analysis are below RBSLs, please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST Permit # 02567 and CA # 49616. If you have any questions regarding this correspondence, please contact me by telephone at (803) 898-0606, by fax at (803) 898-0673, or by e-mail at bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: Approved Cost Agreement
Monitoring Well Approval UMW-25841

cc: Environmental Compliance Services, PO Box 3528, Fort Mill, SC 29708 (w/ enc)

Technical File (w/ enc)

D H E C
PROMOTE PROTECT PROSPER
W. Marshall Taylor Jr., Acting Director
Promoting and protecting the health of the public and the environment

Monitoring Well Approval Form

Approval is hereby granted to:	ECS
(on behalf of):	Rhodes Oil Company
Facility:	Rhodesway North, 1400 Jefferies Hwy, Walterboro, SC
UST Permit Number:	02567
County:	**Colleton**

This approval is for the installation of seven (7) recovery wells. The recovery wells are to be installed in the approved location. The recovery wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.
2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.
3. A Water Well Record Form or other form provided or approved by the Agency shall be completed and submitted to the Agency within 30 days after well completion or abandonment unless another schedule has been approved by the Agency. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f
4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Agency within 30 days of receipt of laboratory results unless another schedule has been approved by the Agency as required by R.61-71.H.1.d.
5. If any of the information provided to the Agency changes, notification to John Bryant (tel: (803) 898-0606 or e-mail: bryantjc@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.
6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.
7. Agency approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **February 4, 2015** **Approval #: UMW-25841**

John C. Bryant, Hydrogeologist
Corrective Action Section
Division of Assessment and Corrective Action
Bureau of Land and Waste Management

Approved Cost Agreement 49616

Facility· 02567 DR OIL LLC

BRYANTJC

PO Number

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
01 PLAN						
		A1	SITE SPECIFIC WORK PLAN	1.0000	150.00	150.00
04 MOB/DEMOB						
		A1	EQUIPMENT	1 0000	1,020 00	1,020.00
		B1	PERSONNEL	4.0000	423 00	1,692 00
09 WELL INSTALLATION						
		HH	RECOVERY WELL (4 INCH DIA)	91.0000	45 00	4,095 00
10 SAMPLE COLLECTION						
		A1	GROUNDWATER (PURGE)	7 0000	60.00	420.00
		C1	WATER SUPPLY	1.0000	22.00	22 00
		D1	GROUNDWATER NO PURGE/DUPLICATE	31 0000	28 00	868.00
		H1	FIELD BLANK	3.0000	24 60	73.80
11 ANALYSES	GW GROUNDWATER					
		A2	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	45.0000	122 00	5,490 00
		F1	EDB BY 8011	42 0000	45.20	1,898 40
16 SUBSEQUENT SURVEY						
		A1	SUBSEQUENT SURVEY	1 0000	260.00	260.00
17 DISPOSAL						
		AA	WASTEWATER	350.0000	0 56	196.00
		C1	SOIL TREATMENT DISPOSAL	10 0000	60 00	600.00
19 RPT/PROJECT MNGT & COORDINATIO						
		PRT	REPORT PREPARATION	0 1200	39,527.45	4,743 29
23 EFR						
		A4	96 HOUR EVENT	1 0000	12,567 50	12,567.50
		C4	OFF GAS TREATMENT 96 HOUR	1.0000	780 00	780.00
		D	SITE RECONNAISSANCE	1 0000	203 25	203 25
		F1	EFFLUENT DISPOSAL	20,000.0000	0.44	8,800 00
		G	AFVR EQUIPMENT MOB	1.0000	391.50	391 50
				Total Amount		44,270 74

D H E C
PROMOTE PROTECT PROSPER

AFVR Audit Form
Underground Storage Tank Management Division

RESULTS:
- ☐ Satisfactory
- ☐ Issues

Date: 5/7/15 Project Manager: John Bryant DHEC Field Staff: John Bryant

Contractor: ECS Contractor Field Staff: Brian

Site Number: 02567 Site Name: Rhodoway North (Dr. Oil)

Time Arrived at Site: 9:30 Time Leaving Site: _____ Weather Conditions: Overcast / 74°

1. Operator on site? ..... ☑ YES ○ NO
2. Proper safety devices employed (e.g. traffic cones, barriers, etc.)? ... ☑ YES ○ NO
3. Correct extraction well(s) being used? ..... ☑ YES ○ NO
4. Vacuum gauge(s) installed on extraction well(s)? ..... ☑ YES ○ NO
5. Vacuum gauge(s) installed on adjacent monitoring well(s)? ..... ☑ YES ○ NO
6. AFVR unit connected to grounded metal object? ..... ☑ YES ○ NO
7. Stinger(s) set at target depth(s)? ..... ☑ YES ○ NO
8. Other extraction and monitoring well(s) sealed? ..... ☑ YES ○ NO
9. Data recorded at appropriate time intervals? ..... ☑ YES ○ NO Last two recorded times? ☑ YES ○ NO
10. Off-gas treatment (if applicable)? ..... ☑ YES ○ NO

UST 30 tech DOCKETING

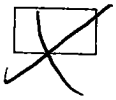
11. Complete Data Records:
- ☐ Stinger Depth
- ☐ Airflow Rate/Velocity
- ☐ Vacuum Readings for Extraction Well(s)
- ☐ Vacuum Readings for Adjacent Monitoring Well(s)
- ☐ Water Level Measurement for Adjacent Monitoring Well(s)
- ☐ Pre-treatment Vapor Concentration Measurements
- ☐ Post-treatment Vapor Concentration Measurements

Signature: _____ Date: 5/7/15

Notes: AFVR Looked Good. PID readings were still high (last reading @ 70hr was 42,000)

MFG. INC.
QUALITY
TRUCK BODIES
& TRAILERS

Document Receipt Information

Hard Copy  CD ☐ Email

Date Received 6-29-15

Permit Number 62567

Project Manager John Bryant

Name of Contractor ECS

UST Certification Number

Docket Number 31Oct

Scanned

Assess/QA report

WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

ASSESSMENT AND CORRECTIVE ACTION REPORT
RHODESWAY NORTH
1400 NORTH JEFFRIES HIGHWAY
WALTERBORO, SOUTH CAROLINA
UST PERMIT #02567

Prepared for:
Rhodes Oil Company
Post Office Box 1545
Walterboro, South Carolina

ECS Project No.14-215778
June 26, 2015

Prepared by:
ECS, Inc.
13504 South Point Blvd, Unit F
Charlotte, NC 28273
tel 704.583.2711 fax 704.583.2744
www.ecsconsult.com

ASSESSMENT AND CORRECTIVE ACTION REPORT

RHODESWAY NORTH
1400 JEFFRIES HIGHWAY
WALTERBORO, SOUTH CAROLINA

UST PERMIT NO. 02567
ECS PROJECT NO. 14-215788

Prepared For:
Rhodes Oil Company
Post Office Box 1545
Walterboro, South Carolina 29488

Prepared By:

Environmental Compliance Services, Inc.
Post Office Box 3528
Fort Mill, South Carolina 29708

June 26, 2015

Noelle France
Project Manager

David R. Mazorra, PE
SC Licensed Professional Engineer #31409

SOUTH CAROLINA LICENSED PROFESSIONAL ENGINEER
No. 31409
DAVID R. MAZORRA
6/26/15

TABLE OF CONTENTS

Page

LIST OF TABLES iii

LIST OF FIGURES iii

LIST OF APPENDICES iii

1.0 INTRODUCTION 1

1.1 SITE INFORMATION 1
1.2 UST OWNER/OPERATOR 1
1.3 PROPERTY OWNER INFORMATION 1
1.4 DHEC CERTIFIED UST SITE REHABILITATION CONTRACTOR INFORMATION 1
1.5 DHEC CERTIFIED UST WELL DRILLER INFORMATION 1
1.6 CERTIFIED LABORATORY INFORMATION 1
1.7 SITE HISTORY 2
1.8 REGIONAL GEOLOGY/HYDROGEOLOGY 2

2.0 RECEPTOR SURVEY & SITE DATA 4

2.1 RECEPTOR SURVEY 4
2.2 SITE GEOLOGY/HYDROGEOLOGY 4

3.0 ASSESSMENT INFORMATION 5

3.1 SOIL ASSESSMENT (NOT REQUIRED) 5
3.2 GROUNDWATER FIELD SCREENING (NOT REQUIRED) 5
3.3 MONITORING WELL INFORMATION 5
3.3.1 Monitoring Well Installations 5
3.3.2 Surveying Well Locations and Top-of-Casing Elevations 5
3.4 GROUNDWATER ASSESSMENT 6
3.4.1 Water Level Measurements 6
3.4.2 Water Sampling and Analyses 6
3.4.3 Groundwater Analytical Data 7
3.4.4 Aquifer Characterization 8
3.5 INVESTIGATIVE DERIVED WASTE 8

4.0 CORRECTIVE ACTION 9

4.1 CORRECTIVE ACTION ACTIVITIES 9
4.1.1 AFVR Event – May 4 –May 8, 2015 9

5.0 CONCLUSIONS AND RECOMMENDATIONS 11

5.1 SUMMARY 11
5.2 CONCLUSIONS 11
5.3 RECOMMENDATIONS 12

6.0 LIMITATIONS 13

6.1 DATA VERIFICATION 13

TABLE OF CONTENTS
(Continued)

TABLES

Table 1: Soil Analytical Data (Not Required)
Table 2: Groundwater Elevation Data
Table 4: Groundwater Analytical Data
Table 5: Aquifer Characteristics (Not Required)
Table 6: Summary of AFVR Data
Table 7: Summary of Groundwater Elevation Data for AFVR Events

FIGURES

Figure 1: Site Locus
Figure 2: Site Map
Figure 3: Soil Quality Map (Not Required)
Figure 4: Groundwater Quality Map
Figure 5: Groundwater Elevation Map
Figure 6: Cross-Section (Not Required)
Figure 7: Predicted Migration (Not Required)

APPENDICES

Appendix A: Site Survey (Not Required)
Appendix B: Sampling Logs, Laboratory Report, Chain of Custody Record and QA/QC Evaluation
Appendix C: Tax Map Information (Not Required)
Appendix D: Boring Logs
Appendix E: Well Construction Records
Appendix F: Aquifer Evaluation Data (Not Required)
Appendix G: Disposal Manifests
Appendix H: Local Zoning Regulations (Not Required)
Appendix I: Fate & Transport Modeling Data (Not Required)
Appendix J: Access Agreements (Not Required)
Appendix K: Data Verification Checklist
Appendix L: Aggressive Fluid Vapor Recovery Event Data
Including: Before and After Data; Field Data Sheets; Air Flow Calculations; Pre-Treatment Emission Calculations; Post - Treatment Emission Calculations

1.0 INTRODUCTION

This report presents the results of the recovery well installation, Aggressive Fluid Vapor Recovery (AFVR), and groundwater sampling activities conducted at the Rhodesway North site between April 20, and June 10, 2015. These activities were conducted in accordance with the Underground Storage Tank (UST) Quality Assurance Program Plan (QAPP) and Cost Agreement Number 49616 as approved by the South Carolina Department of Health and Environmental Control (SCDHEC) in correspondence dated February 18, 2015.

1.1 SITE INFORMATION

UST Facility Name:	Rhodesway North
UST Permit Number:	02567
Facility Address:	1400 Jeffries Highway Walterboro, South Carolina
Telephone Number:	(843) 549-1739

1.2 UST OWNER/OPERATOR

Name:	DR OIL, LLC
Address:	305 Moore Street Walterboro, South Carolina
Telephone Number:	(843) 549-5521

1.3 PROPERTY OWNER INFORMATION

Name:	DR OIL, LLC
Address:	305 Moore Street Walterboro, South Carolina
Parcel Identification (ID):	147-15-00-057.000
Telephone Number:	(843) 549-5521

1.4 DHEC CERTIFIED UST SITE REHABILITATION CONTRACTOR INFORMATION

Name:	Environmental Compliance Services, Inc. (ECS)
Address:	Post Office Box 3528 Fort Mill, South Carolina 29708
Telephone Number:	(800) 627-0493
Certification Number:	358

1.5 DHEC CERTIFIED UST WELL DRILLER INFORMATION

Name:	Tommy Bolyard
Company Name:	Environmental Drilling and Probing Serivce.
Address:	17538 Greenhill Road Charlotte, North Carolina 28278
Certification Number:	1846

1.6 CERTIFIED LABORATORY INFORMATION

Company Name:	Pace Analytical Services, Inc.

Address: 9800 Kincey Avenue, Suite 100
Huntersville, North Carolina 28078
SC Certification: 99006001

1.7 SITE HISTORY

UST Permit: 02567
Site Name: Rhodesway North
Date Release Reported to SCDHEC: April 14, 2011
Estimated Quantity of Product Released: Not reported
Cause of Release: UST system
SC RBCA Classification Code: 2BA
Responsible Party: Rhodes Oil Company

UST Permit 02567

UST #	Size	Product	Date Installed	Status	Date Closed
1	12,000	Super Gasoline	5/19/1987	In Use	NA
2	12,000	Plus Gasoline	5/19/1987	In Use	NA
3	12,000	Regular Gasoline	5/19/1987	In Use	NA
4	12,000	Diesel	5/19/1987	In Use	NA
5	12,000	Diesel	5/19/1987	In Use	NA

The SCDHEC UST Database indicates four releases have been reported at the site. A release was reported at the site on June 21, 2007 with a No Further Action (NFA) determination issued on June 25, 2007. A release was reported November 13, 2009 with an NFA determination dated November 19, 2009. A release was reported on April 14, 2011 which was confirmed on November 22, 2011. A release was reported at the site on February 19, 2013 which had an NFA determination dated February 26, 2013.

1.8 REGIONAL GEOLOGY/HYDROGEOLOGY

The site is located in the Coastal Plain Physiographic Province of South Carolina. The surficial deposits in the vicinity of the site consisted of Pleistocene to Holocene age red, gray and white poorly sorted clayey quartzose and arkosic sand and gravel. The surficial deposits were underlain by an unnamed unit of Pliocene (?) age consisting of tan, red and gray silt, sand and gravel associated with buff to brown silty clay. This unit was underlain by the buff to yellow, arenaceous, fossiliferous clay or marl interbedded with white to gray quartzose sand with shell and shell hash of the upper Miocene Duplin Formation. The middle Miocene Hawthorn Formation, consisting of tan, reddish-purple and gray compact sandy clay with some included gravel and limonite nodules lies beneath the Duplin Formation. The Oligocene age deposits underlying the Hawthorn Formation were reported to consist of the olive-green foraminiferal marl with lenses of quartzose sand of the Cooper Marl.

Beneath the Cooper Marl are a series of upper to middle Eocene units collectively called the Orangeburg group. These units consist of tan, red, brown, yellow and buff sands interbedded with red, tan, green, ochre and purple clays and some white calcareous clays. The most permeable beds in the group are the quartzose sands of the Congaree and McBean Formations. The Santee Limestone, a white to gray, highly fossiliferous, cherty, glauconitic and dolomitic limestone is also a member of the group. The lower Eocene unit is the Black Mingo Formation, which is underlain by an unnamed unit of Paleocene

(Midway) age. These units consist of fine light gray sands and sugary sandstone or bioclastic limestone interbedded with gray shale overlying dark gray to black lignitic shale.

Below the Black Mingo Formation is a series of units collectively called the Cretaceous aquifers. These units, in descending order, are the Peedee Formation, the Black Creek Formation, the Ellenton Formation, and the Tuscaloosa Formation, and consist primarily of medium to course grained glauconitic, phosphatic, quartzitic to arkosic sand and gravel interbedded with sandy marl, limestone or lignitic or kaolinitic clay. The Cretaceous aquifers range in thickness from 500 to over 1,000 feet, and lie unconformably over pre-Cretaceous fanglomerates and conglomerates and crystalline bedrock.

Most wells in the Upper Coastal Plan have been developed in the quartzose sands of the Orangeburg Group, and most of these, except for shallow dug wells, were developed in the McBean and underlying Congaree Formations. Some have also been developed in the Black Mingo Formation, or in the unnamed unit of Paleocene age. Most wells in the Lower Coastal Plain have been developed in the Santee Limestone or its interbedded sands of middle Eocene age, in the underlying sands and limestone of the Black Mingo Formation, and the fine to medium sands of the upper Cretaceous Peedee and Black Creek Formations.

2.0 RECEPTOR SURVEY & SITE DATA

2.1 RECEPTOR SURVEY

The site is located at the intersection of North Jefferies Highway (US Highway 15) and Robertson Boulevard in the city of Walterboro, South Carolina. The area surrounding the site is primarily developed with commercial properties. The surrounding properties include Walker Accounting & Tax Services to the north; Dollar General to the east; Walgreen's to the south across Robertson Boulevard; South Carolina Bank & Trust across the intersection; and, CVS to the west across N. Jefferies Hwy. The topography of the area around the site is generally characterized by gently rolling features. A site location map with topographic features is included as **Figure 1**.

An active water supply well was reported approximately 300 feet north of the USTs in the Tier II assessment dated May 2013. Wetlands have been mapped approximately 275 feet northeast of the site.

Water, fiber optic and sewer lines are present on the northwest corner of the property. These are assumed to be located at approximately five feet below ground surface and could act as preferential pathways for fugitive vapors.

2.2 SITE GEOLOGY/HYDROGEOLOGY

The surface material at the site is primarily asphalt and smaller areas of concrete at the canopy and store building. The asphalt/concrete and gravel base material was approximately 1-foot in thickness. Native soils observed below the thin layer of fill material at the site were generally characterized as tan/brown/clayey sand and sandy clay to depths ranging between 5 feet and 10 feet below ground surface (bgs). Below the sandy clay, the site was underlain by sand to the termination depths of 12 to 14 feet bgs.

Two soil samples collected from the screened intervals of 02567-MW7 and 02567-TW2 and submitted for grain size and hydrometer analyses. The soil from 02567-MW7 was collected at a depth of 10 feet and the soil from 02567-TW2 was collected at 35 feet below grade. Results for the shallow monitoring well 02567-MW7 reported the presence of 0.3% gravel, 82.8% sand, 4.8% silt, and 12.1% clay. Results for the deep monitoring well 02567-TW2 reported the presence of 0.0% gravel, 95.1% sand, 1.3% silt and 3.6% clay. Based on this information the subsurface can be classified as sandy soil.

3.0 ASSESSMENT INFORMATION

The SCDHEC directive for this assessment included a groundwater sampling event from site monitoring wells.

3.1 SOIL ASSESSMENT (NOT REQUIRED)

Soil assessment was not required for the scope of work outlined in the December 10, 2014 directive.

3.2 GROUNDWATER FIELD SCREENING (NOT REQUIRED)

Groundwater field screening was not required for the scope of work outlined in the December 10, 2014 directive.

3.3 MONITORING WELL INFORMATION

3.3.1 Monitoring Well Installations

ECS personnel were on site on between April 20 and April 21, 2015 to supervise the installation of seven four-inch diameter recovery wells 02567-RW4 through 02567-RW10. The locations for these recovery wells were pre-approved by the SCDHEC, and illustrated on **Figure 2**. The wells were installed by Environmental Drilling and Probe Services using a Geoprobe 7822 DT drill rig.

Recovery wells 02567-RW4 through 02567-RW10 were completed to depths of 13 feet bgs. Each recovery well was constructed with a 4-inch schedule 40 polyvinyl chloride (PVC) riser and 10 feet of 0.010-inch slotted PVC well screen.

A sand pack was placed in the annulus to a height of approximately two feet above the top of well screen. A bentonite seal was placed approximately two feet above the sand pack and hydrated. The remainder of the well annulus was filled with grout to the ground surface. The newly constructed wells were each completed with flush-mounted traffic bearing well covers. Following installation, each monitoring well was developed using a decontaminated submersible pump until the groundwater appeared sediment free.

Soil Boring logs for the wells are included in **Appendix D**. Well construction records for the recovery wells have been included as **Appendix E**. Development water and soil cuttings generated during recovery well installation activities were placed in 55-gallon drums and staged onsite for subsequent transport to a licensed facility for disposal. Three tons of soil and 110 gallons of development water were disposed as indicated on the disposal manifest is included in **Appendix G**.

3.3.2 Surveying Well Locations and Top-of-Casing Elevations

On May 6, 2015, ECS measured horizontal distances and top-of-casing elevations of the newly installed recovery wells using pre-existing locations as reference points and established a new temporary benchmark (top of fire hydrant) with assumed datum of 100.00 feet.

3.4 GROUNDWATER ASSESSMENT

3.4.1 Water Level Measurements

On June 8 and 9, 2015, water levels were gauged in 34 monitoring wells (02567-MW1 through 02567-MW22, 02567-RW1 through RW10 and 02567-TW1 and 02567-TW2). Free product was measured in groundwater monitoring wells 02567-MW1, 02567-MW9, 02567-MW10 02567-MW12, 02567-MW13, 02567-MW17, 02567-RW1, 02567-RW2, 02567-RW3, 02567-RW6, and 02567-RW7. Where free product was observed the groundwater elevation was corrected using an assumed free product density of 0.75 grams per milliliter (g/mL). Approximately one half inch of free product was visually observed in a bailer from 02567-MW10.

On June 8, the groundwater elevations measured in the shallow monitoring wells, relative to NAVD 88 ranged from 75.48 feet (02567-MW3) to 63.37 feet (02567-MW16).

Based on these data, the groundwater flow direction was generally toward the northeast. The hydraulic gradient was estimated based on the change in head hydraulic head per unit distance, calculated by using the formula $= \frac{\quad}{\quad}$, referenced from the "EPA On-line Tools for Site Assessment Calculation" website. In this calculation, i is the gradient, h is the hydraulic head at the up gradient monitoring well (h_1) and down gradient monitoring well (h_2), and d is the distance between the down gradient monitoring well and the up gradient monitoring well. The horizontal hydraulic gradient between 02567-MW3 and 02567-MW16 was calculated to be 0.0301 feet per foot (ft/ft).

The groundwater elevations in adjacent (paired) monitoring wells were used to calculate the vertical gradient. The vertical gradient was calculated using the formula $dh/dl = (h_2 - h_1) / (z_2-z_1)$, referenced from the "EPA On-line Tools for Site Assessment Calculation" website. In this calculation, the vertical hydraulic gradient is the difference in head divided by the vertical distance of mid-points of the screened intervals between wells. The vertical hydraulic gradient between monitoring well pair 02567-MW5/02567-TW1 resulted in 0.02357 ft/ft in the downward direction. The vertical hydraulic gradient between monitoring well pair 02567-MW7/02567-TW2 was 0.007097 ft/ft in the upward direction.

Groundwater elevation data is presented in **Table 2**. A groundwater elevation map for site monitoring wells is included as **Figure 5**.

3.4.2 Water Sampling and Analyses

On June 8 and 9, 2015 water samples were obtained from monitoring wells 02567-MW2 through 02567-MW8, , 02567-MW11, 02567-MW14, through 02567-MW16, 02567-MW18 through 02567-MW22 , 02567-TW1, and 02567-TW2, 02567-RW4, and 02567-RW5, 02567-RW8 through 02567-RW10. Two surface water samples, (02567-SW1 and 02567-SW2), and one water supply well sample, (02567-WSW1), were also collected for analysis.

Each monitoring well was purged and/or sampled using a new, disposable polyethylene bailer while wearing new, disposable nitrile gloves. Purging was accomplished by removing three to five well volumes and in-field groundwater quality parameters were stabilized or until the well was bailed dry and allowed to recharge. Groundwater monitoring wells which had been purged within the last year were not purged, unless the water table had submerged the screen. Groundwater monitoring wells 02567-MW2, through 02567-MW8, 02567-MW11, 02567-

MW14, 02567-MW15, 02567-MW20, 02567-MW21, and 02567-MW22, were not purged. Monitoring wells 02567-MW6, 02567-MW18, 02567-MW19,02567-TW1, 02567-TW2, 02567-RW4, 02567-RW5, and 02567-RW8-02567-RW10 were purged during the sampling event.

Groundwater samples were containerized in laboratory-prepared glass bottles, packed on ice, and transported to Pace Analytical Services, Inc. (Huntersville, NC), a South Carolina certified laboratory. Standard chain-of-custody procedures were maintained, as documented in **Appendix B**.

A duplicate sample identified as 02567-Duplicate 1 was collected from 02567-MW11 within 5 minutes of 02567-MW11 groundwater sample collection.

The duplicate sample was assigned a unique identification name with no time listed on the chain of custody to avoid potential laboratory analytical bias. The duplicate sample was identified in the field book. Two field blanks was also collected, during water sampling activities for quality assurance and quality control. A set of trip blanks, were included for quality assurance and quality control.

Thirty water samples (23 wells, 2 surface water 1 water supply well 1 duplicate, 2 field blanks, and 1 trip blank) were analyzed for benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX compounds), naphthalene, 1,2-dichloroethane (1,2-DCA), methyl tertiary butyl ether (MTBE), tertiary amyl alcohol (TAA), tertiary amyl methyl ether (TAME), tertiary butyl alcohol (TBA), tertiary butyl formate (TBF), diisopropyl ether (DIPE), ethanol, ethyl tertiary butyl ether (ETBE), and 3,3-dimethyl-1-butanol by Environmental Protection Agency (EPA) Method 8260. All samples with the exception of the trip blank were analyzed for the presence of ethylene dibromide (EDB) by EPA Method 8011.

3.4.3 Groundwater Analytical Data

Groundwater samples collected from monitoring wells 02567-MW2, 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW8, 02567-MW11, 02567-MW20, 02567-RW4, 02567-RW5, 02567-RW8, 02567-RW9 and 02567-RW10 were reported with one or more dissolved petroleum hydrocarbon concentration above the Risk Based Screening Level (RBSL) as defined in Appendix B of SCDHEC, Bureau of Land and Waste Management, UST Program, May, 15, 2001, *South Carolina Risk Based Corrective Action for Petroleum Releases* or oxygenate concentrations above the Action Limits (ALs) as defined in SCDHEC Bureau of Land and Waste Management, UST Program, October 22, 2008, *Certification of the Oxygenate Compounds*.

Detectable concentrations of benzene was reported above the RBSL in the groundwater samples collected from wells 02567-MW2, 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW11, 02567-RW4, 02567-RW5, 02567-RW8, 02567-RW9, and 02567-RW10.

Detectable concentrations of toluene above the RBSL were reported in the groundwater samples collected from wells 02567-MW11 and 02567-RW8.

Detectable concentrations of ethylbenzene above the RBSL were reported in the groundwater samples collected from wells 02567-MW6, and 02567-MW11.

A detectable concentration of total xylenes above the RBSL was reported in the groundwater sample collected from well 02567-MW11.

Detectable concentrations of MTBE, were reported above the respective RBSL in the groundwater samples collected from wells 02567-MW6, 02567-MW7, 02567-MW8, 02567-MW11, 02567-MW20, 02567-RW4, 02567-RW8, 02567-RW9, and 02567-RW10.

Detectable concentrations of napthalene, was reported above the respective RBSL in the groundwater samples collected from wells 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW11, 02567-MW20, 02567-RW4, 02567-RW5, 02567-RW8, 02567-RW9, and 02567-RW10.

Detectable concentrations of TAA and TBA were reported above their respective AL in the groundwater samples collected from wells 02567-MW7, 02567-MW20, 02567-RW4, 02567-RW8, 02567-RW9, and 02567-RW10. Well 02567-MW6 also was reported to contain TBA above the AL.

Historical groundwater analytical data fare presented in **Table 3**. A groundwater quality map based on the June 2015 analytical data is included as **Figure 4**. Groundwater Sampling Field Data Sheets have been included in **Appendix B**. The laboratory report for groundwater samples collected during this assessment are included in **Appendix B**. A quality assurance and quality control evaluation is also included in **Appendix B**.

3.4.4 Aquifer Characterization (Not Required)

Aquifer characteristics determinations were not required for the scope of work outlined in the February 18, 2015 directive.

3.5 INVESTIGATIVE DERIVED WASTE

Investigative derived waste (IDW) generated during these activities was placed in 55-gallon drums for disposal by a licensed facility. A copy of the disposal manifest for water from decontamination of equipment and purge water has not been received by this office at the time of report preparation. A copy of the manifest will be forwarded to the SCDHEC upon our receipt.

4.0 CORRECTIVE ACTION

The SCDHEC directive included a 96-hour AFVR event using 02567-MW17, 02567-MW12, and 02567-RW2 as extraction points. Monitoring wells 02567-MW10, 02567-MW20 and 02567-MW7 were used as observation wells during this event.

4.1 CORRECTIVE ACTION ACTIVITIES

4.1.1 AFVR Event – May 4 through May 8, 2015

This 96-hour AFVR event was initiated on May 4, 2015 and completed on May 8, 2015. The AFVR event was completed by ECS with activity monitoring provided by Brian Peay and Aaron Williamson of ECS. Prior to the start of the event, the depths to free phase product and groundwater were measured in wells 02567-MW7, 02567-MW10, 02567-MW12, 02567-MW17, 02567-MW20, and 02567-RW1 through 02567-RW10. Free phase petroleum product was found in wells 02567-MW10 (0.66 feet), 02567-MW12 (4.07 feet), 02567-MW17 (2.66 feet), 02567-MW20 (0.33 feet), 02567-RW1 (0.02 feet), 02567-RW2 (0.64 feet), 02567-RW3 (0.27 feet), 02567-RW6 (0.55 feet), and 02567-RW7 (0.35 feet).

This AFVR event consisted of one vacuum system extracting vapors and fluids from target extraction wells using 02567-MW17, 02567-MW12 and 02567-RW2 for approximately 96 hours. The trailer mounted AFVR equipment consisted of one Dekker VMX0303K oil-sealed vacuum system capable of extracting dry vapors from the subsurface at a rate of 275 cubic feet per minute (CFM) at 25 inches Mercury (in.Hg) vacuum. The vacuum blower is connected to a manifold, air/water separator, and magnehelic gauges for system monitoring. A water discharge line is connected from the air/water separator, flow meter, and transfer pump that pumps the water to a holding tank temporarily stored onsite.

The drop tube was initially lowered to the depth of fluid encountered in target extraction wells 02567-MW17, 02567-MW12, and 02567-RW2. The stinger pipe was lowered periodically throughout the first 8 hours of the event and then adjusted to levels with higher vapor concentrations recorded from the exhaust stack. Observation wells were used to monitor the depth to groundwater and collect vacuum radius of influence measurements throughout the AFVR event.

Measurements of vacuum, air velocities, temperature, and off-gas concentration readings were collected at 30-minute intervals during the first eight hours, 1-hour intervals for hours 9-24, and 2-hour intervals for the remainder of the event. Data recording was not required between the hours of midnight and 8 AM and, therefore, suspended during this time frame.

The vacuum readings averaged 25.69 in.Hg over the course of the event. The air velocity rates averaged 374.08 feet per minute (ft/min) from the discharge stack over the course of the event. The organic vapor concentrations recovered from monitoring wells 02567-MW17, 02567-MW12. and 02567-RW2 were measured at the discharge stack using the Bacharach TLV Sniffer and averaged 56,647 parts per million (ppm) over 96 hours for this AFVR event. The exhaust stack gas temperatures averaged 105.64 degrees Fahrenheit (°F). During the period of time when data recording was suspended, the average between the last measurement collected before midnight and the first measurement collected at 8 AM was used in the emission calculations.

The total estimated amount of recovered vapor-phase hydrocarbons was approximately 280.59 pounds (approximately 46.73 equivalent gallons). The total amount of discharged vapor-phase hydrocarbons (post thermal oxidizer treatment) was approximately 0.32 pounds (approximately 0.05 equivalent gallons).

The thermal oxidizer was successful in removing 99% of emissions while in operation. Emission calculations were determined using the manufacture's conversion factor to convert the TLV readings into gas concentrations for benzene.

Approximately 51,692 gallons of liquid were removed from monitoring wells 02567-MW17, 02567-MW12, and 02567-RW2 during the AFVR event. A measurable amount of free phase product was not detected in the holding tank during post-AFVR measurements. Field data sheets, air flow calculations, and emission calculations for this AFVR event are included in **Appendix L**.

A summary of free phase product and AFVR data collected is presented in **Table 6**. A summary of groundwater elevation data is presented in **Table 7**.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

- Water and/or free product levels were gauged in 32 monitoring wells (02567-MW1 through 02567-MW22, 02567-RW1 through 02567-RW10, 02567-TW1, and 02567-TW2) on June 8, and 2015.
- Eleven wells,(02567-MW1, 02567-MW9, 02567-MW10, 02567-MW12, 02567-MW13, 02567-MW17, 02567-RW1, 02567-RW2, 02567-RW3, 02567-RW6 and 02567-RW7) were found to contain free product during the June 2015 groundwater sampling event.
- Water samples were obtained from monitoring wells 02567-MW2 through 02567-MW8, 02567-MW10, 02567-MW11, 02567-MW14, through 02567-MW16, 02567-MW18 through 02567-MW22, 02567-TW1, and 02567-TW2, 02567-RW4, and 02567-RW5, 02567-RW8 through 02567-RW10 on June 8 and 9, 2015. Two surface water samples, 02567-SW1 and 02567-SW2, and one water supply well sample, 02567-WSW1, were also collected for analysis.
- Groundwater samples collected from monitoring wells 02567-MW2, 02567-MW5, 02567-MW6, 02567-MW7, 02567-MW8, 02567-MW11, 02567-MW20, 02567-RW4, 02567-RW5, 02567-RW8, 02567-RW9 and 02567-RW10 were reported with one or more dissolved petroleum hydrocarbon concentration above their respective RBSls/ALs during the June 2015 sampling event.
- Groundwater flow direction during the June 2015 groundwater sampling event was generally toward the northeast.
- The SCDHEC directive for this assessment included completion of a 96 hour AFVR event using 02567-MW17, 02567-MW12 and 02567-RW2 as target extraction points.
- The total estimated amount of recovered vapor-phase hydrocarbons was approximately 280.59 pounds (approximately 46.73 equivalent gallons). The total amount of discharged vapor-phase hydrocarbons (post thermal oxidizer treatment) was approximately 0.32 pounds (approximately 0.05 equivalent gallons).

5.2 CONCLUSIONS

- Based on the presence of petroleum constituents in 02567-MW9 and 02567-MW11 which are located in positions upgradient of the diesel UST and dispenser islands, and downgradient of the gasoline UST and dispensers, contamination in these wells may be the result of a release from the gasoline UST system.
- Based on the groundwater flow direction, and the presence of petroleum hydrocarbon constituents in 02567-MW9 the horizontal extent of dissolved petroleum hydrocarbons has not been defined on the western side of the site.
- Based on the presence of free product in the wells, 02567-MW9 and 02567-MW10, where it was not present during the previous sampling event and the increase of free product thickness in, 02567-MW1, 02567-MW13, and 02567-RW1, the free product plume is mobile and migrating.
- The total estimated amount of recovered vapor-phase hydrocarbons was approximately 280.59 pounds (approximately 46.73 equivalent gallons). The total amount of discharged vapor-phase hydrocarbons (post thermal oxidizer treatment) was approximately 0.32 pounds (approximately 0.05 equivalent gallons).
- The thermal oxidizer was successful in removing 99% of emissions while in operation.
- Based on the increase in free product thickness in 02567-MW10 after the AFVR event, the vacuum placed on the subsurface during the AFVR event drew additional free product into this well.

5.3 RECOMMENDATIONS

- ECS recommends the installation of a shallow groundwater monitoring well in the grassed area north of 02567-MW3 to define the horizontal extent of groundwater contamination.
- ECS recommends the installation of a telescoping well in the vicinity of 02567-MW6 which has the highest concentration of constituents downgradient of the existing free product plume.
- ECS recommends performing additional Aggressive Fluid Vapor Recovery events targeting 02567-MW10, 02567-RW3, 02567-RW6, 02567-RW7 to remove free product and CoCs from the subsurface. .

6.0 LIMITATIONS

This report has been prepared for the exclusive use of Rhodes Oil Company for specific application to the referenced site in Colleton County, South Carolina. The assessment was conducted based on the scope of work and level of effort desired by the SCDHEC and with resources adequate only for that scope of work. Our findings have been developed in accordance with generally accepted standards of geology and hydrogeology practices in the State of South Carolina, available information, and our professional judgment. No other warranty is expressed or implied.

The data that are presented in this report are indicative of conditions that existed at the precise locations sampled and at the time the samples were collected. Additionally, the data obtained from samples would be interpreted as being meaningful with respect to parameters indicated in the laboratory report. No additional information can logically be inferred from these data.

Certain data contained in this report were not obtained under the supervision of ECS. Although the accuracy of these data cannot be verified, for the purposes of this report, ECS assumes that they are correct.

6.1 DATA VERIFICATION

The Project Verifier/Quality Assurance Manager has reviewed this report and provided any additional comments if applicable in **Appendix K**.

TABLES

TABLE 2
GROUNDWATER ELEVATION DATA
RHODESWAY NORTH

Well	Date	Top of Casing Elevation (ft.)	Depth to Water (ft.)	Depth to Product (ft.)	Free Product Thickness (ft.)*	Ground-water Elevation (ft.)	Well Depth (ft.)	Screened Interval (ft.)
02567-MW1	04/17/12	78.57	5.50	---	---	73.07	13.50	3-13
	04/16/13		4.91	4.55	0.36	73.93		
	12/15/14		5.41	4.96	0.45	73.50		
	06/08/15		6.27	4.94	1.33	73.30		
02567-MW2	04/17/12	78.77	5.11	---	---	73.66	13.26	3-13
	04/16/13		3.83	---	---	74.94		
	12/15/14		4.40	---	---	74.37		
	06/08/15		4.62	---	---	74.15		
02567-MW3	04/17/12	80.14	5.85	---	---	74.29	13.98	3-13
	04/16/13		4.04	---	---	76.10		
	12/15/14		4.66	---	---	75.48		
	06/08/15		4.66	---	---	75.48		
02567-MW4	04/16/13	77.22	2.79	---	---	74.43	12.36	3-13
	12/15/14		3.45	---	---	73.77		
	06/08/15		3.46	---	---	73.76		
02567-MW5	04/16/13	78.08	3.75	---	---	74.33	12.50	3-13
	12/16/14		4.33	---	---	73.75		
	06/08/15		4.34	---	---	73.74		
02567-MW6	04/16/13	77.83	4.08	---	---	73.75	12.72	3-13
	12/15/14		4.41	---	---	73.42		
	06/08/15		4.63	---	---	73.20		
02567-MW7	04/16/13	76.94	3.67	---	---	73.27	12.70	3-13
	12/15/14		4.14	---	---	72.80		
	06/08/15		4.19	---	---	72.75		
02567-MW8	04/16/13	77.75	3.65	---	---	74.10	12.97	3-13
	12/15/14		4.26	---	---	73.49		
	06/08/15		4.71	---	---	73.04		
02567-MW9	04/16/13	79.04	4.05	---	---	74.99	12.55	3-13
	12/16/14		4.57	---	---	74.47		
	06/08/15		5.08	4.42	0.66	74.46		
02567-MW10	04/16/13	78.62	4.29	---	---	74.33	12.67	3-13
	12/16/14		4.81	---	---	73.81		
	06/08/15		5.11	5.11	**	73.51		
02567-MW11	04/16/13	79.01	4.40	---	---	74.61	12.16	3-13
	12/16/14		5.04	---	---	73.97		
	06/08/15		5.02	---	---	73.99		
02567-MW12	04/16/13	78.19	5.06	4.19	0.87	74.60	12.65	3-13
	12/15/14		5.06	4.67	0.39	74.24		
	06/08/15		5.14	4.78	0.36	73.32		
02567-MW13	04/16/13	78.13	4.19	---	---	73.94	12.62	3-13
	12/16/14		4.91	4.60	0.31	74.33		
	06/08/15		5.07	4.72	0.35	73.32		
02567-MW14	04/16/13	72.00	3.25	---	---	68.75	7.56	3-8
	12/16/14		3.15	---	---	68.85		
	06/08/15		3.42	---	---	68.58		

TABLE 2
GROUNDWATER ELEVATION DATA
RHODESWAY NORTH

Well	Date	Top of Casing Elevation (ft.)	Depth to Water (ft.)	Depth to Product (ft.)	Free Product Thickness (ft.)*	Ground-water Elevation (ft.)	Well Depth (ft.)	Screened Interval (ft.)
02567-MW15	04/16/13	70.00	3.68	---	---	66.32	11.39	3-8
	12/16/14		3.64	---	---	66.36		
	06/08/15		3.82	---	---	66.18		
02567-MW16	04/16/13	67.00	3.80	---	---	63.20	10.12	3-8
	12/16/14		3.47	---	---	63.53		
	06/08/15		3.63	---	---	63.37		
02567-MW17	04/16/13	77.80	5.09	3.88	1.21	73.62	13.00	3-13
	12/15/14		5.85	4.20	1.65	73.19		
	06/08/15		5.53	4.35	1.18	73.16		
02567-MW18	04/30/13	76.32	2.46	---	---	73.86	12.30	3-13
	12/15/14		2.20	---	---	74.12		
	06/08/15		2.60	---	---	73.72		
02567-MW19	04/30/13	74.80	1.28	---	---	73.52	12.12	3-13
	12/15/14		1.52	---	---	73.28		
	06/08/15		1.79	---	---	73.01		
02567-MW20	04/30/13	77.46	3.99	---	---	73.47	13.27	3-13
	12/15/14		4.35	---	---	73.11		
	06/08/15		4.56	---	---	72.90		
02567-MW21	04/30/13	75.75	2.77	---	---	72.98	12.59	3-13
	12/15/14		3.39	---	---	72.36		
	06/08/15		4.12	---	---	71.63		
02567-MW22	04/30/13	75.67	4.70	---	---	70.97	13.18	3-13
	12/15/14		5.07	---	---	70.60		
	06/08/15		5.37	---	---	70.30		
02567-TW1	04/16/13	78.41	4.44	---	---	73.97	35.42	30-35
	12/16/14		5.42	---	---	72.99		
	06/08/15		5.65	---	---	72.76		
02567-TW2	04/16/13	77.17	3.20	---	---	73.97	36.85	30-35
	12/15/14		3.94	---	---	73.23		
	06/08/15		4.23	---	---	72.94		
02567-RW1	04/16/13	78.77	4.49	---	---	74.28	12.94	3-13
	12/15/14		5.11	4.99	0.12	73.75		
	06/08/15		5.53	4.89	0.64	73.72		
02567-RW2	04/16/13	78.23	4.13	---	---	74.10	13.23	3-13
	12/15/14		4.90	4.55	0.35	74.37		
	06/08/15		4.80	4.66	0.14	73.54		
02567-RW3	04/16/13	78.10	4.18	---	---	73.92	13.20	3-13
	12/15/14		4.78	4.56	0.22	74.40		
	06/08/15		4.64	4.52	0.12	73.55		
02567-RW4	06/08/15	79.20	4.46	---	---	74.74	13.00	3-13
02567-RW5	06/08/15	79.08	4.06	---	---	75.02	13.00	3-13
02567-RW6	06/08/15	78.71	4.54	4.10	0.44	74.50	13.00	3-13
02567-RW7	06/08/15	78.21	5.50	4.77	0.73	73.26	13.00	3-13
02567-RW8	06/08/15	77.91	4.35	---	---	73.56	13.00	3-13
02567-RW9	06/08/15	78.84	4.53	---	---	74.31	13.00	3-13
02567-RW10	06/08/15	77.61	4.37	---	---	73.24	13.00	3-13

Notes:
Elevations relative datum NAVD 88.
** Free product visiually identified in MW10. Not a measureable amount.
MW-14, MW-15, MW-16 are stick up wells in the Swampy/Wooded Area.
* Groundwater elevation corrected for the presence of free product when present using an assumed free product density of 0.75 g/mL

TABLE 4
GROUNDWATER ANALYTICAL DATA
RHODESWAY NORTH

(µg/L)	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)	TAA (µg/L)	TAME (µg/L)	TBA (µg/L)	TBF (µg/L)	DIPE (µg/L)	Ethanol (µg/L)	ETBE (µg/L)	3,3-Dimethyl 1-butanol (µg/L)
RBSLs/ALs		**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**	**15**	**240**	**128**	**1400**	--	**150**	**10000**	**47**	--
02567-MW1	04/17/12	**5,110**	**6520**	**873 J**	**3940 J**	**43200**	<2000	<2000	<0.020	**81**	**32100 J**	<4000	<40000	<20000	<2000	<80000	<4000	<40000
	04/17/13	**Free Product**																
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-MW2	04/17/12	3.7 J	5.0 J	<5.0	<15	4.0 J	<5.0	<5.0	<0.021	**158**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	04/17/13	**27.5**	<5.0	<5.0	<10.5	17.9	<5.0	<5.0	<0.020	<5.0	131	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	3.2 J	<5.0	<5.0	<10.0	3.6 J	<5.0	<5.0	<0.023	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	**21.9**	<5.0	2.4 J	<10.0	**7.7**	<5.0	<5.0	<0.019	NR	147	<10.0	149	<50.0	<5.0	<200	<10.0	<100
02567-MW3	04/17/12	2.3 J	14.7	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**241**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW4	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**87.5**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW5	04/17/13	**16.6**	23.6	37.3	175.6	<5.0	15	<5.0	<0.021	**533**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/16/14	**68.9**	54.2	93.9	522	6.7	**40.8**	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	**312**	392	523	2970	26.2	**269**	<5.0	<0.019	NR	157	<10.0	116	<50.0	<5.0	<200	<10.0	<100
02567-MW6	04/17/13	**6110**	**4410**	**3080**	**7290**	**2140**	**716**	<5.0	<0.020	**23.7**	<1,000	<100	**1760**	<500	<50.0	<2,000	<100	<1,000
	12/15/14	**4450**	**1190**	**2260**	4070	**633**	**601**	<250	<0.020	NR	<5000	<500	**2900 J**	<2500	<250	<10000	<500	<5000
	06/09/15	**4200**	695	**2230**	3980	**808**	**530**	<250	<0.019	NR	<5000	<500	**3940 J**	<2500	<250	<10000	<500	<5000
02567-MW7	04/17/13	**1010**	<50.0	<50.0	<150	**1110**	<50.0	<50.0	<0.020	**74.2**	**2270**	<100	**6060**	<500	<50.0	<2,000	<100	<1,000
	12/15/14	**757**	<50.0	45.6 J	182	**319**	**39.6 J**	<50.0	<0.021	NR	**1700**	<100	**6820**	<500	<50.0	<2000	<100	<1000
	06/09/15	**551**	<25.0	25.1	167	**473**	**42.3**	<25.0	<0.019	NR	**1640**	<50.0	**6920**	<250	<25.0	<1000	<50.0	<500
02567-MW8	04/17/13	**122**	27.5	17.2	32.8	**185**	20.3	<5.0	<0.020	**114**	**370**	<10.0	816	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<10.0	<10.0	<10.0	<20.0	**156**	<10.0	<10.0	<0.020	NR	203	<20.0	353	<100	<10.0	<400	<20.0	<200
	06/09/15	<5.0	<5.0	<5.0	<10.0	**120**	2.5 J	<5.0	<0.019	NR	171	<10.0	492	<50.0	<5.0	<200	<10.0	<100
02567-MW9	04/17/13	**13600**	**16300**	**1600**	6860	**70500**	**617**	<50.0	<0.020	**88**	**39000**	**216**	**12100**	<500	<50.0	<2000	<100	<1000
	12/16/14	**22100**	**32000**	**3450**	**17900**	**69700**	<2500	<2500	<0.021	NR	<50000	<5000	<50000	<25000	<2500	<100000	<5000	<50000
	06/08/15	**Free Product**																
02567-MW10	04/17/13	**4280**	286	**710**	2689	**14500**	**207**	<100	<0.020	**23.8**	**20100**	<200	**71100**	<1,000	<100	<4,000	<200	<2,000
	12/16/14	**2400**	<1250	655 J	<2500	**7850**	<1250	<1250	<0.020	NR	<25000	<2500	**19300 J**	<12500	<1250	<50000	<2500	<25000
	06/08/15	**Free Product**																
02567-MW11	04/17/13	**19600**	**18000**	**2610**	**11600**	**16800**	**462**	<50.0	<0.020	**56.3**	**8260**	<100	**19200**	<500	<50.0	<2,000	<100	<1,000
	12/16/14	**16100**	**13700**	**2860**	**12100**	**13900**	**623 J**	<1000	<0.020	NR	<20000	<2000	**15300 J**	<10000	<1000	<40000	<2000	<20000
	06/09/15	**15100**	**14800**	**2960**	**13400**	**14600**	**925 J**	<1000	<0.020	NR	<20000	<2000	<20000	<10000	<1000	<40000	<2000	<20000

TABLE 4
GROUNDWATER ANALYTICAL DATA
RHODESWAY NORTH

(µg/L)	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)	TAA (µg/L)	TAME (µg/L)	TBA (µg/L)	TBF (µg/L)	DIPE (µg/L)	Ethanol (µg/L)	ETBE (µg/L)	3,3-Dimethyl 1-butanol (µg/L)
RBSLs/ALs		**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**	**15**	**240**	**128**	**1400**	--	**150**	**10000**	**47**	--
02567-MW12	04/17/13	**Free Product**																
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-MW13	04/17/13	**861**	<100	410	844	**4640**	**172**	<100	<0.019	**15.8**	<2,000	<200	**4610**	<1,000	<100	<4,000	<200	<2,000
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-MW14	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**54.3**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/16/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW15	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**345**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/16/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW16	04/17/13	<5.0	<5.0	<5.0	<15	9.1	<5.0	<5.0	<0.020	**845**	**249**	<10.0	**1730**	<50.0	<5.0	<200	<10.0	<100
	12/16/14	<10.0	<10.0	<10.0	<20.0	8.5 J	<10.0	<10.0	<0.020	NR	<200	<20.0	601	<100	<10.0	<400	<20.0	<200
	06/09/15	<5.0	<5.0	<5.0	<10.0	4.8 J	9.1	<5.0	<0.019	NR	<100	<10.0	301	<50.0	<5.0	<200	<10.0	<100
02567-MW17	04/17/13	**Free Product**																
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-MW18	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.021	**94.9**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW19	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.019	**30.2**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-MW20	04/30/13	**324**	32.5	23.5	456.5	**3250**	16.8	<5.0	<0.020	**156**	**11700**	12.7	**11400**	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<500	<500	<500	<1000	**8130**	<500	<500	<0.021	NR	**19700**	<1000	**33000**	<5000	<500	<20000	<1000	<10000
	06/09/15	<500	<500	<500	<1000	**6460**	**207 J**	<500	<0.019	NR	**17600**	<1000	**30300**	<5000	<500	<20000	<1000	<10000
02567-MW21	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**122**	167	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	2.8 J	<5.0	<5.0	<0.020	NR	<100	<10.0	252	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	4.2 J	<5.0	<5.0	<0.019	NR	126	<10.0	585	<50.0	<5.0	<200	<10.0	<100
02567-MW22	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**64.5**	<100	<10.0	128	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	2.0 J	<5.0	<5.0	<0.021	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100

TABLE 4
GROUNDWATER ANALYTICAL DATA
RHODESWAY NORTH

(µg/L)	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naph-thalene (µg/L)	1,2 DCA (µg/L)	EDB (µg/L)	Total Lead (µg/L)	TAA (µg/L)	TAME (µg/L)	TBA (µg/L)	TBF (µg/L)	DIPE (µg/L)	Ethanol (µg/L)	ETBE (µg/L)	3,3-Dimethyl 1-butanol (µg/L)
RBSLs/ALs		**5**	**1000**	**700**	**10000**	**40**	**25**	**5**	**0.05**	**15**	**240**	**128**	**1400**	--	**150**	**10000**	**47**	--
02567-TW1	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**22.9**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/16/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-TW2	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	**37.8**	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/09/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-RW1	04/17/13	**2900**	**3030**	573	2632	**8200**	<250	<250	<0.020	**82.1**	**6580**	<500	**14000**	<2,500	<250	<10,000	<500	<5,000
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-RW2	04/17/13	**962**	334	200	815	**1260**	**68**	<50.0	<0.020	**30.9**	**2840**	<100	<100	<500	<50.0	<2,000	<100	<1,000
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-RW3	04/17/13	**2740**	**2920**	**963**	4179	**13500**	<500	<500	<0.020	**52.7**	<10,000	<1,000	**11000**	<5,000	<500	<20,000	<1,000	<10,000
	12/15/14	**Free Product**																
	06/08/15	**Free Product**																
02567-RW4	06/09/15	**455**	<25.0	65.2	85.2	**53.7**	**70.9**	<25.0	<0.019	NR	**1430**	<50.0	**6830**	<250	<25.0	<1000	<50.0	<500
02567-RW5	06/09/15	**32.1**	18.2	217	456	<10.0	**109**	<10.0	<0.020	NR	<200	<20.0	<200	<100	<10.0	<400	<20.0	<200
02567-RW6	06/08/15	**Free Product**																
02567-RW7	06/08/15	**Free Product**																
02567-RW8	06/09/15	**1560**	**2120**	382	1900	**2320**	**174**	<100	<0.019	NR	**1810 J**	<200	**4370**	<1000	<100	<4000	<200	<2000
02567-RW9	06/09/15	**240**	159	214	1620	**42.5 J**	**79.5**	<50.0	<0.020	NR	**2160**	<100	**18400**	<500	<50.0	<2000	<100	<1000
02567-RW10	06/09/15	**162**	<12.5	15.6	<25.0	**251**	**29.5**	<12.5	<0.019	NR	**612**	<25.0	**1430**	<125	<12.5	<500	<25.0	<250
02567-SW1	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.4	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-SW2	04/30/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	<5.0	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	12/16/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.020	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
02567-WSW1	04/17/13	<5.0	<5.0	<5.0	<15	<5.0	<5.0	<5.0	<0.020	8.2	NR	NR	NR	NR	NR	NR	NR	NR
	12/15/14	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100
	06/08/15	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<5.0	<0.019	NR	<100	<10.0	<100	<50.0	<5.0	<200	<10.0	<100

Notes:
Analyses for volatile organics by Method 8260; Analyses for EDB by EPA Method 8011; Analyses for Total Lead by Method 6010. NR - Analysis not requested.
Concentrations in bold face type exceeded the RBSLs or ALs.
J - Estimated concentration between the laboratory reporting limit and the method detection limit.
< - Less that the method detection limit specified in the laboratory report.
Risk Based Action Levels are defined in the South Carolina Department of Health and Environmental Control (SCDHEC), Bureau of Land and Waste Management, Underground Storage Tank Program, May, 15, 2001, South Carolina Risk Based Corrective Action for Petroleum Releases. Corrective Action for Petroleum Releases. The ALs are defined in SCDHEC, Bureau of Land and Waste Management, Underground Storage Tank Program, October 22, 2008, Certification of the Oxygenate Compounds.

TABLE 6
SUMMARY OF AGGRESSIVE FLUID VAPOR RECOVERY DATA
RHODESWAY NORTH

Well ID	Date	Time (hours)	Average Effluent Velocity (ft/min)	Average Effluent Temperature (F^o)	Average Effluent Concentration (ppm)	Total Free Product Volatized (gallons)	Total Free Product as Fluid (gallons)	Total Free Product Recovered (gallons)	Total Volume of Fluid removed (gallons)
02567-MW17	5/4-5/8 2015	96	374.08	105.64	56647	15.577	0	15.577	17,230.7
02567-MW12	5/4-5/8 2015	96	374.08	105.64	56647	15.577	0	15.577	17,230.7
02567-RW2	5/4-5/8 2015	96	374.08	105.64	56647	15.577	0	15.577	17,230.7
Totals		--	--	--	--	46.73	0	46.73	51,692

Notes:
Duration of the AFVR event at well location(s).
Total Volatized in gallons = Air emissions in pounds/(6.25 lbs./gal.)
Total Free Product as Fluid is obtained from disposal manifest and/or correspondence with subcontractors from each AFVR event.
Total Free Product Recovered = Total Free Product Volatized + Total Free Product as Fluid.

TABLE 7
SUMMARY OF GROUNDWATER ELEVATION DATA
AGGRESSIVE FLUID VAPOR RECOVERY EVENTS
RHODESWAY NORTH

Well ID	Date Measured	Top of Casing Elevation (ft.)	Depth to Groundwater (ft.)	Depth to Free Product (ft.)	Free Product Thickness (ft.)	Groundwater Elevation (ft.)	Well Depth (ft.)	Screened Interval (ft.)
02567-MW17	5/4/15(pre-AFVR)	77.80	6.26	3.60	2.66	69.54	13	3-13
	5/8/15(immediately post-AFVR)		6.55	--	--	71.25		
	5/8/15(20 minutes post-AFVR)		5.93	--	--	71.87		
02567-MW12	5/4/15(pre-AFVR)	78.19	7.65	3.58	4.07	67.49	13	3-13
	5/8/15(immediately post-AFVR)		6.46	--	--	71.73		
	5/8/15(20 minutes post-AFVR)		6.02	--	--	72.17		
02567-RW2	5/4/15(pre-AFVR)	78.23	4.71	4.07	0.64	73.04	13	3-13
	5/8/15(immediately post-AFVR)		6.90	--	--	71.33		
	5/8/15(20 minutes post-AFVR)		5.65	--	--	72.58		
02567-MW10	5/4/15(pre-AFVR)	78.62	4.91	4.25	0.66	73.22	13	3-13
	5/8/15(immediately post-AFVR)		6.70	6.00	0.70	71.40		
	5/8/15(20 minutes post-AFVR)		6.50	5.60	0.90	71.45		
02567-MW20	5/4/15(pre-AFVR)	77.46	4.48	4.15	0.33	72.73	13	3-13
	5/8/15(immediately post-AFVR)		6.48	--	--	70.98		
	5/8/15(20 minutes post-AFVR)		6.18	--	--	71.28		
02567-MW7	5/4/15(pre-AFVR)	76.94	4.15	--	--	72.79	13	3-13
	5/8/15(immediately post-AFVR)		5.78	--	--	71.16		
	5/8/15(20 minutes post-AFVR)		5.86	--	--	71.08		

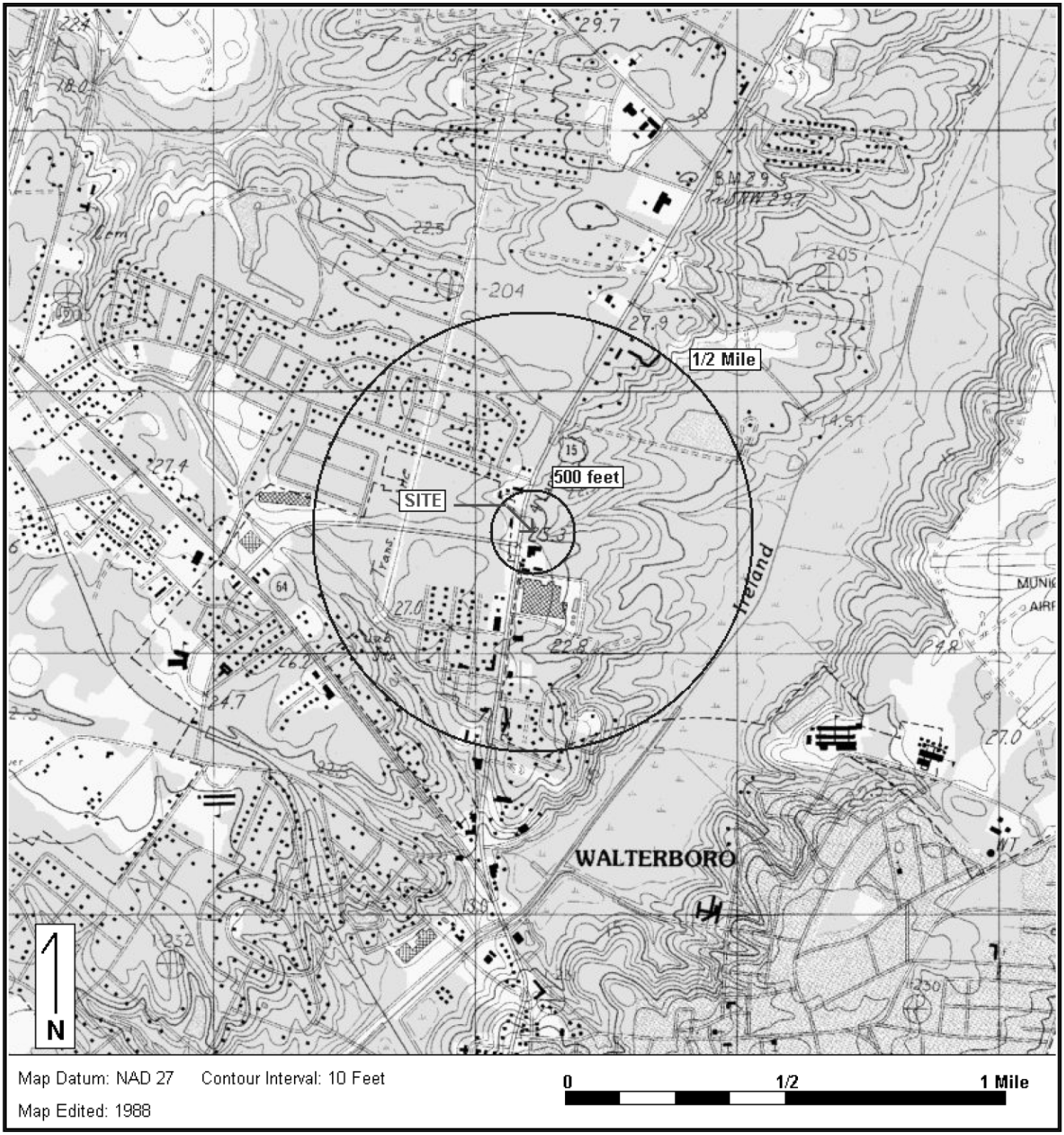
Groundwater elevation adjusted for the presence of free product, where present, with an assumed density of 0.75 g/cm^3.

FIGURES

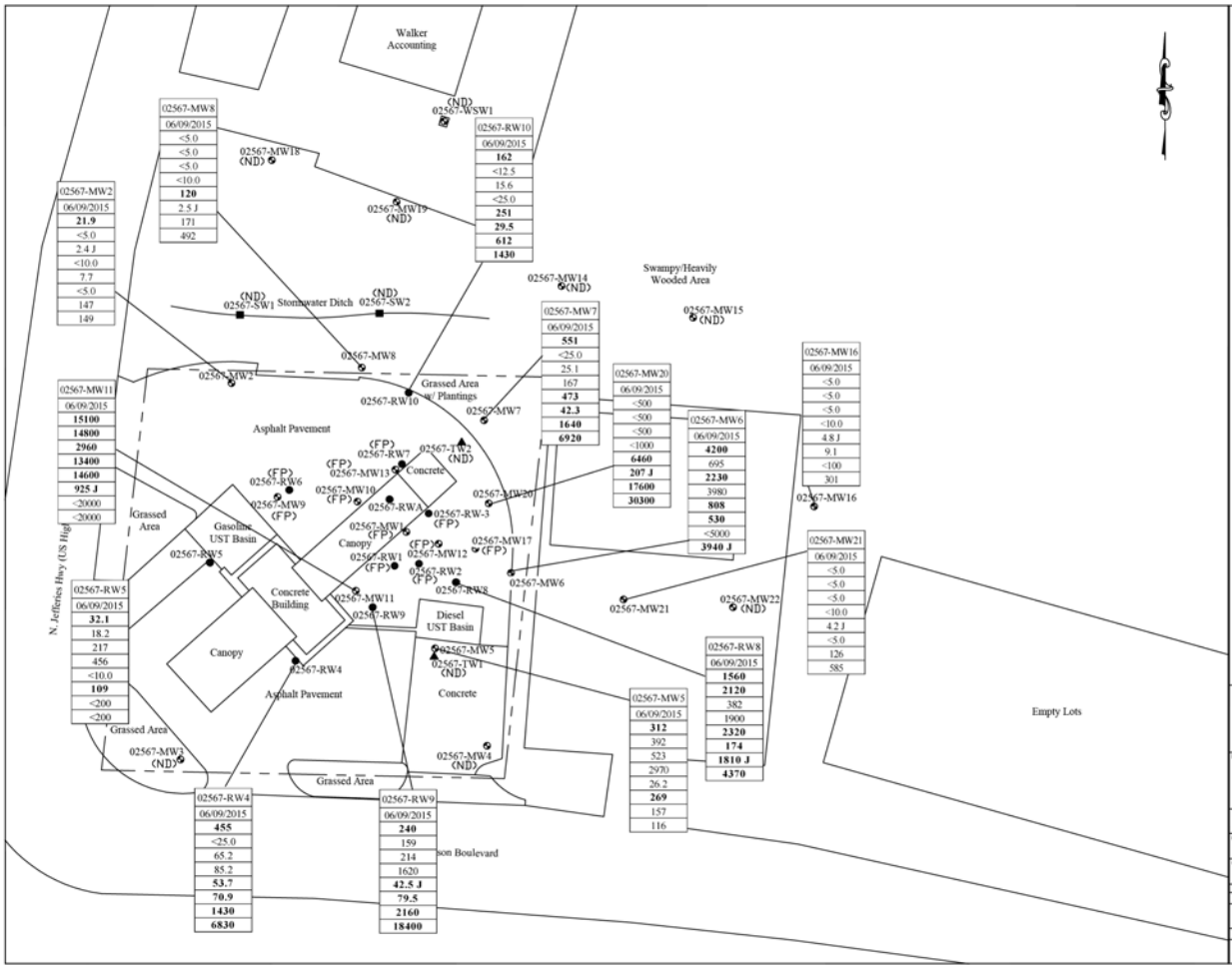
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins



Legend

- 02567-RW1 ● Recovery Well
- 02567-TW1 ▲ Deep Monitoring Well
- 02567-MW1 ⊕ Shallow Monitoring Well
- 02567-WSW1 ⊠ Water Supply Well
- 02567-SW2 ■ Surface Water Sample Loc.

Sample ID	
Constituent of Concern	RBSL/AL
Benzene	5
Toluene	1000
Ethylbenzene	700
Xylene (Total)	10000
Methyl-tert-butyl ether	40
Naphthalene	25
tert-Amyl Alcohol	240
tert-Butyl Alcohol	1400

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

All concentrations are measured in micrograms per liter (ug/L).

Above concentrations represent February 16 & 17, 2015 Risk-Based Screening Levels; Concentrations in bold face type exceeded the RBSL.

<1.0 – Less than the reporting limit specified in the laboratory report.

FP – Free Product

ND – Not Detected

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-2776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

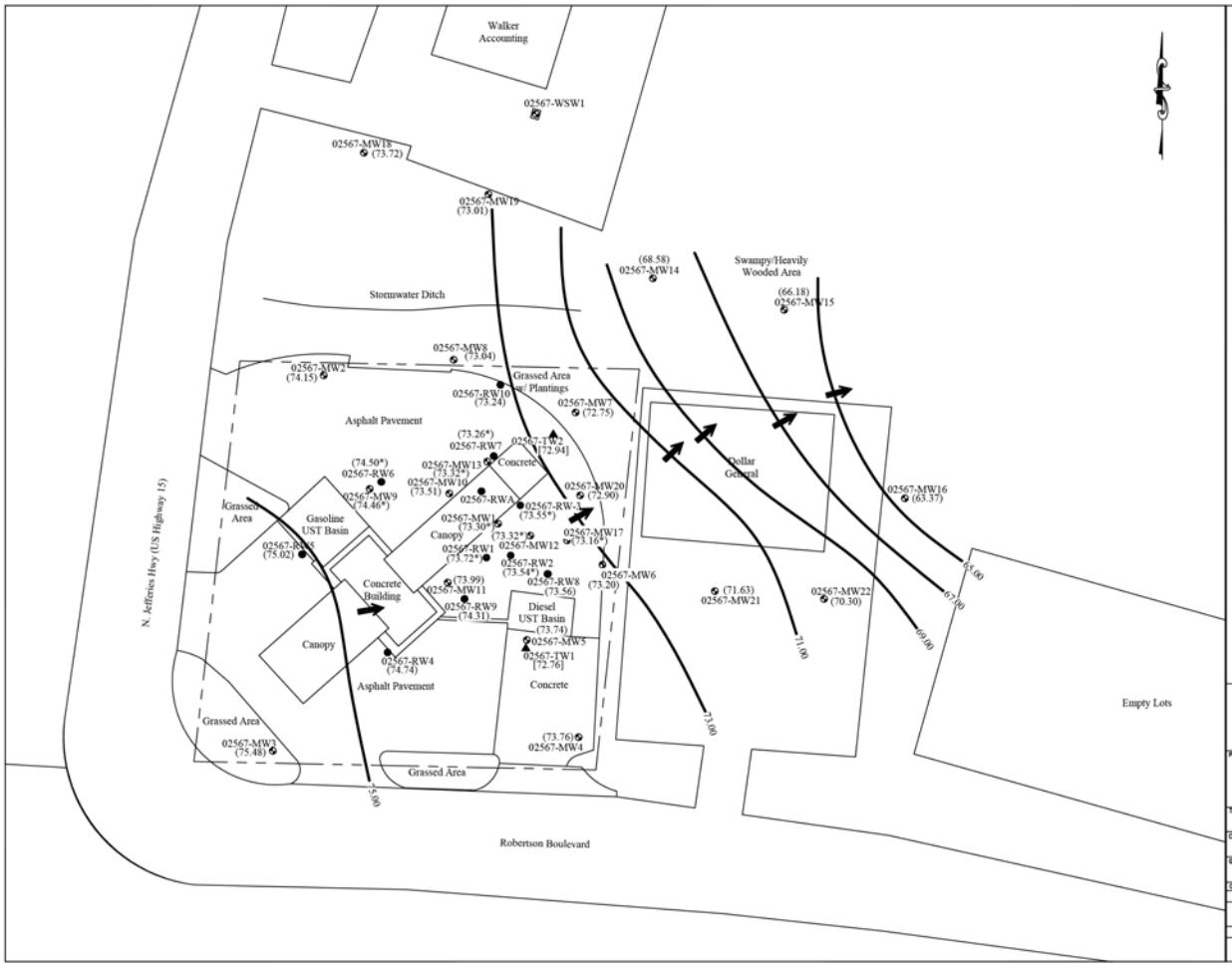
TITLE:
Groundwater Quality Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	6/23/15	14-215778	4



Legend

- 02567-RW1 ● Recovery Well
- 02567-TW1 ▲ Deep Monitoring Well
- 02567-MW1 ⊕ Shallow Monitoring Well
- 02567-WSW1 ⊠ Water Supply Well
- (74.15) Shallow Monitoring Well Groundwater Elevation (feet)
- [72.76] Telescoping Monitoring Well Groundwater Elevation (feet)
- (73.30*) Groundwater Elevation corrected for the presence of Free Product
- 75.00 Groundwater Elevation Contour
- Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Telescoping wells were not used to evaluate groundwater flow.

Groundwater elevations based on guaging event dated 6/8/15 & 6/9/15.

Free product density assumed to be 0.75g/ml

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-700-3530 Fax: 413-789-2776

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
Groundwater Elevation Map

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE :

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	6/23/15	14-215778	5

APPENDIX B

Sampling Logs, Laboratory Report, Chain of Custody Record and QA/QC Evaluation

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 75°F, Cloudy	Ambient Air Temp (°F):

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	Y1JENUJS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567-MW2	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.89
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.62	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.27		1 casing volume (CV = LWC x C) (gals.): 1.34	3 casing volumes (3 x CV) (gals.): 4.04

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									0920
PH (s.u.)									6.17
Specific Conductivity (µS/cm)									.679
Water Temperature (°C)									27.55
Turbidity (NTU)									>1000
Dissolved Oxygen (mg/L)									2.21

Sampling Data

Sampled By: B. Peay	Sampling Time: 0920	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: No purge required. Purged and sampled within 12 months. Water column within screen.

Signature: [signature]

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peavy
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 75°F, Cloudy	Ambient Air Temp (°F):

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	41JEN4JS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567-MW3	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 14.20
Depth to Free Product (DFP) (ft.): N/A		Depth to Groundwater (DGW) (ft.): 4.66	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 9.54		1 casing volume (CV = LWC x C) (gals.): 1.55	3 casing volumes (3 x CV) (gals.): 4.66

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									1000
PH (s.u.)									2.62
Specific Conductivity (µS/cm)									.001
Water Temperature (°C)									27.09
Turbidity (NTU)									295
Dissolved Oxygen (mg/L)									8.83

Sampling Data

Sampled By: B. Peavy	Sampling Time: 1000	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: No purge required. Sampled and purged within 12 months. Water column within the screen.

Signature: B. Peavy

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: BP, KW
County: Colleton	Project Manager: Noelle France	General Weather Conditions: Overcast	Ambient Air Temp (°F): 75°F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 (Y) or N	at 28 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: MW4	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___ Pump
___MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.36
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 3.46	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.9		1 casing volume (CV = LWC x C) (gals.): 1.45	3 casing volumes (3 x CV) (gals.): 4.35

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	.25	1.5	3.0	3.75	4.5				4.75
Time (military)	1045	1046	1050	1053	1056				1102
PH (s.u.)	6.41	6.50	6.52	6.49	6.46				6.52
Specific Conductivity (µS/cm)	0.654	0.718	0.710	0.712	0.715				0.694
Water Temperature (°C)	27.0	26.35	25.04	24.76	24.66				23.99
Turbidity (NTU)	10.2	77.6	246.0	327.0	708.0				68.9
Dissolved Oxygen (mg/L)	4.78	3.34	3.63	3.80	3.63				2.08

Sampling Data

Sampled By: K Wright	Sampling Time: 1102	Duplicate: Y or N	If yes, Duplicate Time:

Notes: ~~Purging not required. Last purged Dec 2014 and water level within screened interval~~

Signature: K Wright

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date:	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: BP & KW
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 82 °F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0: (Y) or N	at 28 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: MW5	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ___Bailer ___Pump
___MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.34
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 4.34	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8		1 casing volume (CV = LWC x C) (gals.): 1.3	3 casing volumes (3 x CV) (gals.): 3.9

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									.25
Time (military)									1300
PH (s.u.)									5.82
Specific Conductivity (µS/cm)									0.335
Water Temperature (°C)									30.49
Turbidity (NTU)									23.0
Dissolved Oxygen (mg/L)									9.21

Sampling Data

Sampled By: KWright	Sampling Time: 1300	Duplicate: Y or N	If yes, Duplicate Time:

Notes: Purging not required - water level within screened interval and last purged Dec 2014

Signature: [signature]

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B.P. K.W
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 75°

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 (Y) or N	at 26 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: MW6	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___ Pump
✓ MW ___ IW ___ RW ___ Surface Water ___ Other ___ Private WSW ___ Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.83
Depth to Free Product (DFP) (ft.): ND		Depth to Groundwater (DGW) (ft.): 4.63	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.2		1 casing volume (CV = LWC x C) (gals.): 1.34	3 casing volumes (3 x CV) (gals.): 4.0

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									.25
Time (military)									1131
PH (s.u.)									6.21
Specific Conductivity (µS/cm)									0.561
Water Temperature (°C)									26.92
Turbidity (NTU)									16.3
Dissolved Oxygen (mg/L)									1.84

Sampling Data

Sampled By: K Wright	Sampling Time: 1131	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Purging not required. Last purged Dec 2014 and water level within screened interval

Signature: [signature]

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 81°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	Y1JENUJS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: 02567-MW7	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___ Pump
X MW ___ IW ___ RW ___ Surface Water ___ Other ___ Private WSW ___ Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.60
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.19	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.41		1 casing volume (CV = LWC x C) (gals.): 1.37	3 casing volumes (3 x CV) (gals.): 4.11

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0								0.0
Time (military)									1255
PH (s.u.)									3.52
Specific Conductivity (µS/cm)									.138
Water Temperature (°C)									31.38
Turbidity (NTU)									112
Dissolved Oxygen (mg/L)									1.82

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1255	Duplicate: Y or N	If yes, Duplicate Time:

Notes: No purge required. Purged and sampled within 12 months. water column within the screen.

Signature: B Peay

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 75°F, Cloudy	Ambient Air Temp (°F):

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	Y1SEN4JS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: Y or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567 - MW8	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.75
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.71	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.04		1 casing volume (CV = LWC x C) (gals.): 1.31	3 casing volumes (3 x CV) (gals.): 3.93

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									0940
PH (s.u.)									5.51
Specific Conductivity (µS/cm)									.103
Water Temperature (°C)									24.87
Turbidity (NTU)									83.6
Dissolved Oxygen (mg/L)									2.42

Sampling Data

Sampled By: B. Peay	Sampling Time: 0940	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: No purge required. Purged within 12 month and water column within the screen

Signature: B Peay

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 72°F, Rain & misty.	Ambient Air Temp (°F): 70's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	41JEN405	pH 4.0: Y or (N) 4.01	at °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: Y or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567-MW11	Well Diameter (inches): 2.0	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ___Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.28
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 5.02	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 7.26		1 casing volume (CV = LWC x C) (gals.): 1.18	3 casing volumes (3 x CV) (gals.): 3.55

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									1630
PH (s.u.)									5.76
Specific Conductivity (µS/cm)									.556
Water Temperature (°C)									26.27
Turbidity (NTU)									283
Dissolved Oxygen (mg/L)									0.73

Sampling Data

Sampled By: B. Peay	Sampling Time: 1630	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: No purge required. Purged and sample within 12 months. water column within screen.

Signature: B Peay

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	YHENKJS	pH 4.0: Y or (N) 4.01	at 22.24C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567-MW14	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 8	Total Well Depth (TWD) (ft.): 7.64
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 3.42	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 4.22		1 casing volume (CV = LWC x C) (gals.): 0.68	3 casing volumes (3 x CV) (gals.): 2.06

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0								0.0
Time (military)	1610								1615
PH (s.u.)	5.80								5.84
Specific Conductivity (µS/cm)	.101								0.99
Water Temperature (°C)	26.10								25.63
Turbidity (NTU)	99								>1000
Dissolved Oxygen (mg/L)	1.80								1.74

Sampling Data

Sampled By: B. Peay	Sampling Time: 1615	Duplicate: Y or N	If yes, Duplicate Time:

Notes: No purge required.

Signature: B. Peay

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	YISENKJ5	pH 4.0: Y or (N) 4.01	at 22.24 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: 02567-MW15	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___ Pump
___MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 8.0	Total Well Depth (TWD) (ft.): 11.51
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 3.82	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 7.69		1 casing volume (CV = LWC x C) (gals.): 1.25	3 casing volumes (3 x CV) (gals.): 3.76

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0								0.0
Time (military)	1622								1630
PH (s.u.)	5.79								5.89
Specific Conductivity (µS/cm)	0.045								0.050
Water Temperature (°C)	29.52								29.57
Turbidity (NTU)	45								256
Dissolved Oxygen (mg/L)	1.95								2.01

Sampling Data

Sampled By: B. Peay	Sampling Time: 1630	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature: Brian K Peay	

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel:
County: Colleton	Project Manager: Noelle France	General Weather Conditions: Overcast	Ambient Air Temp (°F): 83 °F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 (Y) or N	at 28 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: MW16	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___Pump
___MW ___IW ___RW ___Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 8	Total Well Depth (TWD) (ft.): 10.25
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 3.63	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 6.62		1 casing volume (CV = LWC x C) (gals.): 1.08	3 casing volumes (3 x CV) (gals.): 3.24

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	.25								~~.25~~ .50
Time (military)	1000								~~1000~~ 1330
PH (s.u.)	5.43								~~5.43~~ 5.70
Specific Conductivity (µS/cm)	0.024								~~0.024~~ 0.159
Water Temperature (°C)	22.70								~~22.70~~ 23.20
Turbidity (NTU)	52.6								~~52.6~~ >999
Dissolved Oxygen (mg/L)	10.50								~~10.50~~ 5.19

Sampling Data

Sampled By: KWright	Sampling Time: 1330	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes: Well purged dry after 1 volume.			
		Signature: K Wright	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:		
Horiba U-52 (pH)	YUFENKJ5	pH 4.0: Y or (N) 4.01	at 22.24 °C	
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L: Y or (N) 9.05
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N		

Well Information

Well ID: 02567-MW18	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 11.71
Depth to Free Product (DFP) (ft.): 0.0		Depth to Groundwater (DGW) (ft.): 2.60	Free Product Thickness (ft.): NM
Length of water column (LWC = TWD – DGW) (ft.): 9.11		1 casing volume (CV = LWC x C) (gals.): 1.48	3 casing volumes (3 x CV) (gals.): 4.44

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	1.48	1.48		1.48		1.48	1.48	0.0
Time (military)	1525	15:29	1533		1537		1541	1544	1548
PH (s.u.)	5.46	5.51	5.50		5.39		5.40	5.43	5.34
Specific Conductivity (µS/cm)	.122	.148	.137		.098		.112	.126	.081
Water Temperature (°C)	26.85	26.38	27.22		27.60		25.26	25.12	24.52
Turbidity (NTU)	432	>1000	>1000		>1000		>1000	>1000	>1000
Dissolved Oxygen (mg/L)	7.17	3.05	1.51		1.11		2.19	2.32	0.81

Sampling Data

Sampled By: B. Peay	Sampling Time: 1548	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature: B. Peay	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	YIJENUJS	pH 4.0: Y or N (Y) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L: Y or N	9.05
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567 – MW19	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.08
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 1.79	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 10.29		1 casing volume (CV = LWC x C) (gals.): 1.67	3 casing volumes (3 x CV) (gals.): 5.01

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	1.67	1.67		1.67		~~25.99~~ 1.67	1.67	0.0
Time (military)	1440	1443	1446		1450		1453	1456	1459
PH (s.u.)	6.36	6.40	6.36		6.34		6.34	6.37	6.36
Specific Conductivity (µS/cm)	.381	.481	.475		.502		.506	.510	.384
Water Temperature (°C)	30.71	28.73	27.13		26.83		25.99	24.83	25.11
Turbidity (NTU)	7.0	0.0	>1000		>1000		>1000	>1000	>1000
Dissolved Oxygen (mg/L)	2.14	2.10	1.98		1.94		1.44	1.50	1.94

Sampling Data

Sampled By: B. Peay	Sampling Time: 1459	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature: B. Peay	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 75°F, Cloudy	Ambient Air Temp (°F): 70's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	41JENUJS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: 02567-MW20	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ___Bailer ___Pump
X MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.65
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.56	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.09		1 casing volume (CV = LWC x C) (gals.): 1.31	3 casing volumes (3 x CV) (gals.): 3.95

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									1600
PH (s.u.)									2.96
Specific Conductivity (µS/cm)									.160
Water Temperature (°C)									27.68
Turbidity (NTU)									71000
Dissolved Oxygen (mg/L)									2.27

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1600	Duplicate (Y) or N	If yes, Duplicate Time: 1600

Notes: Purge not required. Purged and sampled within 12 months. Water column within the screen. Duplicate taken from 02567-MW20.

Signature: Brian Peay

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: KW & BP
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 75° F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 (Y) or N	at 28.4 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: MW-21	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of ~~Purging~~/Sample Collection: ✓Bailer ___Pump
✓MW ___IW ___RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.63
Depth to Free Product (DFP) (ft.): ND		Depth to Groundwater (DGW) (ft.): 4.12	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.51		1 casing volume (CV = LWC x C) (gals.): 1.39	3 casing volumes (3 x CV) (gals.): 4.16

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									.25
Time (military)									0900
PH (s.u.)									4.88
Specific Conductivity (µS/cm)									0.291
Water Temperature (°C)									30.73
Turbidity (NTU)									19.2
Dissolved Oxygen (mg/L)									1.51

Sampling Data

Sampled By: K. Wright	Sampling Time: 0900	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Purging not required. Last purged Dec 2014 and water level within screened interval

Signature: K. Wright

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: KW, BP
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 75°

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 ~~7~~ or N	at 28.4°C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: MW-22	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___ Pump
✓ MW ___ IW ___ RW ___ Surface Water ___ Other ___ Private WSW ___ Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 13.30
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 5.37	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 7.93		1 casing volume (CV = LWC x C) (gals.): 1.29	3 casing volumes (3 x CV) (gals.): 3.88

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									.25
Time (military)									0930
PH (s.u.)									5.58
Specific Conductivity (µS/cm)									0.303
Water Temperature (°C)									25.35
Turbidity (NTU)									16.9
Dissolved Oxygen (mg/L)									2.20

Sampling Data

Sampled By: KWright	Sampling Time: 0930	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Purging not required last purged Dec 2014 and water level within screened interval

Signature: K Wright

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: BP & KW
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 81

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0 (Y) or N	at 28 °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm (Y) or N		DO 8.52 mg/L (Y) or N	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: TW1	Well Diameter (inches): 2"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___ Pump
✓ MW ___ IW ___ RW ___ Surface Water ___ Other ___ Private WSW ___ Public WSW		Screened Interval (ft.): 30 to 35	Total Well Depth (TWD) (ft.): 35.13
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 5.65	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 29.48		1 casing volume (CV = LWC x C) (gals.): 4.8	3 casing volumes (3 x CV) (gals.): 14.42

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	.33	5.0	10.0	12.5	15.0				15.33
Time (military)	1200	1204	1220	1225	1230				1233
PH (s.u.)	6.50	5.54	5.27	4.77	4.46				4.75
Specific Conductivity (µS/cm)	0.020	0.012	0.011	0.018	0.021				0.024
Water Temperature (°C)	30.48	25.87	26.10	24.82	24.71				25.58
Turbidity (NTU)	12.5	79.0	132.0	275.0	405.0				342.0
Dissolved Oxygen (mg/L)	5.79	3.38	5.65	4.33	2.63				1.93

Sampling Data

Sampled By: Knight	Sampling Time: 1233	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature:	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 78°F, Sunny	Ambient Air Temp (°F): 70's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	41SEN455	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: 02567-TW2	Well Diameter (inches): 2	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___ Pump
___MW ___IW ___RW ___ Surface Water X Other ___Private WSW ___Public WSW		Screened Interval (ft.): 30 to 35	Total Well Depth (TWD) (ft.): 36.99
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.23	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 32.76		1 casing volume (CV = LWC x C) (gals.): 5.33	3 casing volumes (3 x CV) (gals.): 16.01

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	5.33	5.33	~~5.33~~ 2.66	~~5.33~~ 2.66				0.0
Time (military)	1338	1348	1358	1402	1407				1410
PH (s.u.)	5.95	5.16	5.20	5.43	5.01				4.50
Specific Conductivity (µS/cm)	.036	.000	.025	.026	.024				.024
Water Temperature (°C)	29.28	30.29	27.96	25.74	25.13	~~25.13~~ 25.80			24.17
Turbidity (NTU)	36.4	382	581	647	652				604
Dissolved Oxygen (mg/L)	1.00	7.63	0.22	3.09	0.29				0.30

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1410	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature: B Peay	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date:	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: BP & KW
County: Colleton	Project Manager: Noelle France	General Weather Conditions: overcast	Ambient Air Temp (°F): 85°F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0: Y or N	at °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: Y or N		DO 8.52 mg/L: Y or N	
Horiba U-52 (Turbidity)		0.0 NTU: Y or N			

Well Information

Well ID: RW4	Well Diameter (inches): 4"	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ___Bailer ___Pump
___MW ___IW ✓RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 13.45
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 4.46	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.99		1 casing volume (CV = LWC x C) (gals.): 5.86	3 casing volumes (3 x CV) (gals.): 17.58

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	.5	5	10	12.5	15.0				15.5
Time (military)	1530	1535	1540	1543	1546				1551
PH (s.u.)	6.06	5.99	5.86	5.78	5.66				5.71
Specific Conductivity (µS/cm)	0.544	0.573	0.489	0.429	0.370				0.295
Water Temperature (°C)	28.14	26.63	25.13	24.74	24.61				24.62
Turbidity (NTU)	111.0	>999	>999	>999	>999				>999
Dissolved Oxygen (mg/L)	6.02	4.17	3.81	4.71	4.71				2.96

Sampling Data

Sampled By: KWright	Sampling Time: 1551	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature:	

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 79°F, Sunny	Ambient Air Temp (°F): 70's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	YIJENUJS	pH 4.0: Y or (N) 4.01	at °C 25.48		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N			

Well Information

Well ID: 02567-RW5	Well Diameter (inches): 4	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___ Pump
___MW ___IW X RW ___Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 13.22
Depth to Free Product (DFP) (ft.): N/A		Depth to Groundwater (DGW) (ft.): 4.06	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 9.16		1 casing volume (CV = LWC x C) (gals.): 5.98	3 casing volumes (3 x CV) (gals.): 17.94

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	5.98	5.98		5.98		5.98	5.98	0.0
Time (military)	1040	1050	1100	++	1109		1115	1121	1125
PH (s.u.)	5.95	6.01	5.86		5.72		5,66	4.84	5.70
Specific Conductivity (µS/cm)	.217	.201	.182		.088		.096	.001	.144
Water Temperature (°C)	27.61	26.35	26.00	~~25.98~~	25.98		26.45	26.77	27.40
Turbidity (NTU)	0.0	>1000	>1000		>1006		>1000	>1000	>1000
Dissolved Oxygen (mg/L)	0.17	1.47	0.64		0.96		1.64	4.33	1.10

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1125	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Purged using bailer. Strong ordor from well.

Signature: Brian Peay

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:		
Horiba U-52 (pH)	YIJENUJS	pH 4.0: Y or (N) 4.01	at °C 25.48C	
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N	DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU (Y) or N		

Well Information

Well ID: 02567-RW8	Well Diameter (inches): 4	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
___MW ___IW X RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.79
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.35	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.44		1 casing volume (CV = LWC x C) (gals.): 5.51	3 casing volumes (3 x CV) (gals.): 16.53

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	5.51	5.51	2.25	2.25				0.0
Time (military)	1437	1440	1444	1446	1449				1456
PH (s.u.)	3.43	2.72	2.65	2.75	2.87				3.12
Specific Conductivity (µS/cm)	.251	1.16	1.44	1.39	.878				.531
Water Temperature (°C)	32.01	28.92	28.42	29.13	26.97				26.94
Turbidity (NTU)	21.3	>1000	>1000	>1000	>1000				>1000
Dissolved Oxygen (mg/L)	1.17	1.20	4.24	2.05	4.34				3.21

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1456	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Well Purged Dry AFTER 3 WV. Took sample. Sheen seen in sample.

Signature: Brian Peay

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6/9/15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: BP & KW
County: Colleton	Project Manager: Noelle France	General Weather Conditions: Overcast	Ambient Air Temp (°F): 85 °F

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)		pH 4.0: Y or N	at °C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: Y or N		DO 8.52 mg/L: Y or N	
Horiba U-52 (Turbidity)		0.0 NTU: Y or N			

Well Information

Well ID: RW9	Well Diameter (inches): 4	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ✓ Bailer ___ Pump
___MW ___IW ✓RW ___ Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 13.23
Depth to Free Product (DFP) (ft.): NP		Depth to Groundwater (DGW) (ft.): 4.54	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.69		1 casing volume (CV = LWC x C) (gals.): ~~5.09~~ 5.66	3 casing volumes (3 x CV) (gals.): ~~15.00~~ 17.00

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	.5	5.00	10.0	12.5	15.0				15.25
Time (military)	1405	1410	1416	1423	1427				1435
PH (s.u.)	5.63	5.79	5.77	5.85	5.87				5.86
Specific Conductivity (µS/cm)	0.355	0.436	0.460	0.455	0.452				0.445
Water Temperature (°C)	29.85	27.87	26.55	26.72	26.09				26.78
Turbidity (NTU)	43.2	>999	>999	>999	>999				>999
Dissolved Oxygen (mg/L)	3.00	5.05	4.91	6.07	5.06				9.32

Sampling Data

Sampled By: KWright	Sampling Time: 1435	Duplicate: Y or (N)	If yes, Duplicate Time:
Notes:			
		Signature:	

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-9-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: B. Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 78°F, Sunny	Ambient Air Temp (°F): 70's

Quality Assurance

Meter Name:	Serial #:	Calibration:		
Horiba U-52 (pH)	Y1JEN4JS	pH 4.0: Y or (N) 4.01	at °C 25.48	
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N	DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N		

Well Information

Well ID: 02567-RW10	Well Diameter (inches): 4	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
___MW ___IW X RW ___Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): 3 to 13	Total Well Depth (TWD) (ft.): 12.97
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): 4.37	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): 8.60		1 casing volume (CV = LWC x C) (gals.): 5.61	3 casing volumes (3 x CV) (gals.): 16.8

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0	5.61							0.0
Time (military)	1149	1154							1215
PH (s.u.)	4.38	6.16							5.95
Specific Conductivity (µS/cm)	.335	.604							.004
Water Temperature (°C)	30.12	27.62	~~27.62~~						29.94
Turbidity (NTU)	107	>1000							>1000
Dissolved Oxygen (mg/L)	.82	2.50							7.49

Sampling Data

Sampled By: Brian Peay	Sampling Time: 1215	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Well purged dry after 1 WV plus 1 gallon. Took sample

Signature: BPF

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: Brian Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	Y1JENKJS	pH 4.0: Y or N 4.01	at 22.24°C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: Y or N		DO 8.52 mg/L: Y or N 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: Y or N			

Well Information

Well ID: 02567-SW1	Well Diameter (inches):	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
___MW ___IW ___RW X Surface Water ___Other ___Private WSW ___Public WSW		Screened Interval (ft.): — to —	Total Well Depth (TWD) (ft.): —
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): —	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): —		1 casing volume (CV = LWC x C) (gals.): —	3 casing volumes (3 x CV) (gals.): —

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									29.0
Time (military)									13:15
PH (s.u.)									7.38
Specific Conductivity (µS/cm)									.235
Water Temperature (°C)									32.42
Turbidity (NTU)									17.9
Dissolved Oxygen (mg/L)									5.62

Sampling Data

Sampled By: B Peay	Sampling Time: 1315	Duplicate: Y or N	If yes, Duplicate Time:

Notes: Sampled using bailer. Surface water.

Signature: B Peay

D H E C

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: Brian Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:			
Horiba U-52 (pH)	41JENU55	pH 4.0: Y or (N) 4.01	at 22.24°C		
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N		DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity)		0.0 NTU: (Y) or N			

Well Information

Well ID: 02567-SW2	Well Diameter (inches):	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: X Bailer ___Pump
___MW ___IW ___RW X Surface Water ___Other		Screened Interval (ft.): — to —	Total Well Depth (TWD) (ft.): —
___Private WSW ___Public WSW			
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): —	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): —		1 casing volume (CV = LWC x C) (gals.): —	3 casing volumes (3 x CV) (gals.): —

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)									0.0
Time (military)									13.38
PH (s.u.)									6.64
Specific Conductivity (µS/cm)									.202
Water Temperature (°C)									34.74
Turbidity (NTU)									3.1
Dissolved Oxygen (mg/L)									5.81

Sampling Data

Sampled By: B. Peay	Sampling Time: 13.38	Duplicate: Y or (N)	If yes, Duplicate Time:

Notes: Sampled using bailer.

Signature: [signature]

Underground Storage Tank Management Division
Field Data Information Sheet – Sampling

Site Information

Date: 6-8-15	Site ID #: 02567	Site Name: Rhodesway North	Field Personnel: Brian Peay
County: Colleton	Project Manager: Noelle France	General Weather Conditions: 82°F, Partly Sunny	Ambient Air Temp (°F): 80's

Quality Assurance

Meter Name:	Serial #:	Calibration:		
Horiba U-52 (pH) 4.0	Y1SENUJS	pH 4.0: Y or N Yes 4.01	at 22.24C	
Horiba U-52 (Specific Conductivity, Dissolved Oxygen)		Specific Conductivity 4.49 mS/cm: (Y) or N	DO 8.52 mg/L: Y or (N) 9.05	
Horiba U-52 (Turbidity) 0.0 NTU		0.0 NTU: (Y) or N 0.0 NTU		

Well Information

Well ID: 02567-WSW1	Well Diameter (inches): N/A	Conversion Factor (C): 1" well = 0.047, 2" well = 0.163, 4" well = 0.652	Method of Purging/Sample Collection: ___Bailer _X_Pump Sigot
___MW ___IW ___RW ___ Surface Water _X_Other _X_Private WSW ___Public WSW		Screened Interval (ft.): — to —	Total Well Depth (TWD) (ft.): —
Depth to Free Product (DFP) (ft.): —		Depth to Groundwater (DGW) (ft.): —	Free Product Thickness (ft.): —
Length of water column (LWC = TWD – DGW) (ft.): —		1 casing volume (CV = LWC x C) (gals.): —	3 casing volumes (3 x CV) (gals.): —

Purging Data

	Initial	1st Vol.	2nd Vol.	2½ Vol.	3rd Vol.	3½ Vol.	4th Vol.	5th Vol.	Sampling
Volume Purged (gallons)	0.0								1240 (10 mins)
Time (military)	1230								1240
PH (s.u.)									8.55
Specific Conductivity (µS/cm)									.696
Water Temperature (°C)									29.78
Turbidity (NTU)									0.0
Dissolved Oxygen (mg/L)									5.10

Sampling Data

Sampled By: B. Peay	Sampling Time: 1240	Duplicate: Y or (N)	If yes, Duplicate Time: N/A

Notes: Purged for 10 minutes from Sigot on inside of pump house.

Signature: B. Peay

Pace Analytical Services, Inc.
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(704)875-9092

June 18, 2015

Noelle France
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: Rhodesway North
Pace Project No.: 92253873

Dear Noelle France:
Enclosed are the analytical results for sample(s) received by the laboratory on June 10, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
Project Manager

Enclosures

cc: Aaron Williamson, Environmental Compliance Services

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CERTIFICATIONS

Project: Rhodesway North
Pace Project No.: 92253873

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: Rhodesway North
Pace Project No.: 92253873

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92253873001	**02567-MW4**	Water	06/09/15 11:02	06/10/15 17:20
92253873002	**02567-MW5**	Water	06/09/15 13:00	06/10/15 17:20
92253873003	**02567-MW6**	Water	06/09/15 11:31	06/10/15 17:20
92253873004	**02567-MW16**	Water	06/09/15 13:30	06/10/15 17:20
92253873005	**02567-MW21**	Water	06/09/15 09:00	06/10/15 17:20
92253873006	**02567-MW22**	Water	06/09/15 09:30	06/10/15 17:20
92253873007	**02567-RW4**	Water	06/09/15 15:51	06/10/15 17:20
92253873008	**02567-RW9**	Water	06/09/15 14:35	06/10/15 17:20
92253873009	**02567-TW1**	Water	06/09/15 12:33	06/10/15 17:20
92253873010	**Trip Blank**	Water	06/09/15 00:00	06/10/15 17:20
92253873011	**02567-WSW-1**	Water	06/08/15 12:40	06/10/15 17:20

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92253873

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92253873001	**02567-MW4**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873002	**02567-MW5**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873003	**02567-MW6**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873004	**02567-MW16**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873005	**02567-MW21**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873006	**02567-MW22**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873007	**02567-RW4**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873008	**02567-RW9**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873009	**02567-TW1**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253873010	**Trip Blank**	EPA 8260	CCL	18	PASI-C
92253873011	**02567-WSW-1**	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW4 **Lab ID: 92253873001** Collected: 06/09/15 11:02 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:46	06/11/15 22:03	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	97	%	60-140		1	06/11/15 15:46	06/11/15 22:03	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 18:48	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 18:48	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 18:48	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 18:48	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 18:48	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 18:48	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 18:48	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 18:48	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 18:48	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 18:48	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 18:48	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 18:48	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 18:48	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 18:48	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 18:48	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	121	%	70-130		1		06/11/15 18:48	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	70-130		1		06/11/15 18:48	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		06/11/15 18:48	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW5 **Lab ID: 92253873002** Collected: 06/09/15 13:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:46	06/11/15 22:23	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	06/11/15 15:46	06/11/15 22:23	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**157**	ug/L	100	76.8	1		06/11/15 21:55	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 21:55	994-05-8	
Benzene	**312**	ug/L	62.5	21.2	12.5		06/13/15 01:27	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 21:55	624-95-3	
tert-Butyl Alcohol	**116**	ug/L	100	57.7	1		06/11/15 21:55	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 21:55	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 21:55	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 21:55	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 21:55	64-17-5	
Ethylbenzene	**523**	ug/L	62.5	20.0	12.5		06/13/15 01:27	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 21:55	637-92-3	
Methyl-tert-butyl ether	**26.2**	ug/L	5.0	1.7	1		06/11/15 21:55	1634-04-4	
Naphthalene	**269**	ug/L	62.5	25.0	12.5		06/13/15 01:27	91-20-3	
Toluene	**392**	ug/L	62.5	20.0	12.5		06/13/15 01:27	108-88-3	
Xylene (Total)	**2970**	ug/L	125	33.8	12.5		06/13/15 01:27	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	114	%	70-130		1		06/11/15 21:55	460-00-4	
1,2-Dichloroethane-d4 (S)	113	%	70-130		1		06/11/15 21:55	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		06/11/15 21:55	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW6 **Lab ID: 92253873003** Collected: 06/09/15 11:31 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/11/15 22:43	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	103	%	60-140		1	06/11/15 15:47	06/11/15 22:43	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	5000	3840	50		06/11/15 21:04	75-85-4	
tert-Amylmethyl ether	ND	ug/L	500	170	50		06/11/15 21:04	994-05-8	
Benzene	**4200**	ug/L	250	85.0	50		06/11/15 21:04	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	5000	1600	50		06/11/15 21:04	624-95-3	
tert-Butyl Alcohol	**3940J**	ug/L	5000	2880	50		06/11/15 21:04	75-65-0	
tert-Butyl Formate	ND	ug/L	2500	365	50		06/11/15 21:04	762-75-4	
1,2-Dichloroethane	ND	ug/L	250	90.0	50		06/11/15 21:04	107-06-2	
Diisopropyl ether	ND	ug/L	250	85.0	50		06/11/15 21:04	108-20-3	
Ethanol	ND	ug/L	10000	6890	50		06/11/15 21:04	64-17-5	
Ethylbenzene	**2230**	ug/L	250	80.0	50		06/11/15 21:04	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	500	180	50		06/11/15 21:04	637-92-3	
Methyl-tert-butyl ether	**808**	ug/L	250	85.0	50		06/11/15 21:04	1634-04-4	
Naphthalene	**530**	ug/L	250	100	50		06/11/15 21:04	91-20-3	
Toluene	**695**	ug/L	250	80.0	50		06/11/15 21:04	108-88-3	
Xylene (Total)	**3980**	ug/L	500	135	50		06/11/15 21:04	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	122	%	70-130		50		06/11/15 21:04	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%	70-130		50		06/11/15 21:04	17060-07-0	
Toluene-d8 (S)	101	%	70-130		50		06/11/15 21:04	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW16 **Lab ID: 92253873004** Collected: 06/09/15 13:30 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/11/15 23:03	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	65	%	60-140		1	06/11/15 15:47	06/11/15 23:03	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 22:12	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 22:12	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 22:12	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 22:12	624-95-3	
tert-Butyl Alcohol	**301**	ug/L	100	57.7	1		06/11/15 22:12	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 22:12	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 22:12	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 22:12	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 22:12	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 22:12	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 22:12	637-92-3	
Methyl-tert-butyl ether	**4.8J**	ug/L	5.0	1.7	1		06/11/15 22:12	1634-04-4	
Naphthalene	**9.1**	ug/L	5.0	2.0	1		06/11/15 22:12	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 22:12	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 22:12	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	122	%	70-130		1		06/11/15 22:12	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	70-130		1		06/11/15 22:12	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		06/11/15 22:12	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW21 **Lab ID: 92253873005** Collected: 06/09/15 09:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/11/15 23:24	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	89	%	60-140		1	06/11/15 15:47	06/11/15 23:24	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**126**	ug/L	100	76.8	1		06/11/15 22:29	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 22:29	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 22:29	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 22:29	624-95-3	
tert-Butyl Alcohol	**585**	ug/L	100	57.7	1		06/11/15 22:29	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 22:29	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 22:29	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 22:29	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 22:29	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 22:29	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 22:29	637-92-3	
Methyl-tert-butyl ether	**4.2J**	ug/L	5.0	1.7	1		06/11/15 22:29	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 22:29	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 22:29	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 22:29	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	122	%	70-130		1		06/11/15 22:29	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	70-130		1		06/11/15 22:29	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		06/11/15 22:29	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-MW22 **Lab ID: 92253873006** Collected: 06/09/15 09:30 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/11/15 23:44	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	06/11/15 15:47	06/11/15 23:44	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 19:05	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 19:05	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 19:05	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 19:05	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 19:05	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 19:05	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 19:05	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:05	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 19:05	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 19:05	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 19:05	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:05	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 19:05	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 19:05	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 19:05	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	122	%	70-130		1		06/11/15 19:05	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	70-130		1		06/11/15 19:05	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		06/11/15 19:05	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-RW4 **Lab ID: 92253873007** Collected: 06/09/15 15:51 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/12/15 00:04	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	84	%	60-140		1	06/11/15 15:47	06/12/15 00:04	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1430**	ug/L	500	384	5		06/11/15 21:21	75-85-4	
tert-Amylmethyl ether	ND	ug/L	50.0	17.0	5		06/11/15 21:21	994-05-8	
Benzene	**455**	ug/L	25.0	8.5	5		06/11/15 21:21	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	500	160	5		06/11/15 21:21	624-95-3	
tert-Butyl Alcohol	**6830**	ug/L	500	288	5		06/11/15 21:21	75-65-0	
tert-Butyl Formate	ND	ug/L	250	36.5	5		06/11/15 21:21	762-75-4	
1,2-Dichloroethane	ND	ug/L	25.0	9.0	5		06/11/15 21:21	107-06-2	
Diisopropyl ether	ND	ug/L	25.0	8.5	5		06/11/15 21:21	108-20-3	
Ethanol	ND	ug/L	1000	689	5		06/11/15 21:21	64-17-5	
Ethylbenzene	**65.2**	ug/L	25.0	8.0	5		06/11/15 21:21	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	50.0	18.0	5		06/11/15 21:21	637-92-3	
Methyl-tert-butyl ether	**53.7**	ug/L	25.0	8.5	5		06/11/15 21:21	1634-04-4	
Naphthalene	**70.9**	ug/L	25.0	10.0	5		06/11/15 21:21	91-20-3	
Toluene	ND	ug/L	25.0	8.0	5		06/11/15 21:21	108-88-3	
Xylene (Total)	**85.2**	ug/L	50.0	13.5	5		06/11/15 21:21	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	126	%	70-130		5		06/11/15 21:21	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	70-130		5		06/11/15 21:21	17060-07-0	
Toluene-d8 (S)	99	%	70-130		5		06/11/15 21:21	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-RW9 **Lab ID: 92253873008** Collected: 06/09/15 14:35 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:47	06/12/15 00:25	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	93	%	60-140		1	06/11/15 15:47	06/12/15 00:25	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**2160**	ug/L	1000	768	10		06/11/15 21:38	75-85-4	
tert-Amylmethyl ether	ND	ug/L	100	34.0	10		06/11/15 21:38	994-05-8	
Benzene	**240**	ug/L	50.0	17.0	10		06/11/15 21:38	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	1000	321	10		06/11/15 21:38	624-95-3	
tert-Butyl Alcohol	**18400**	ug/L	1000	577	10		06/11/15 21:38	75-65-0	
tert-Butyl Formate	ND	ug/L	500	73.0	10		06/11/15 21:38	762-75-4	
1,2-Dichloroethane	ND	ug/L	50.0	18.0	10		06/11/15 21:38	107-06-2	
Diisopropyl ether	ND	ug/L	50.0	17.0	10		06/11/15 21:38	108-20-3	
Ethanol	ND	ug/L	2000	1380	10		06/11/15 21:38	64-17-5	
Ethylbenzene	**214**	ug/L	50.0	16.0	10		06/11/15 21:38	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	100	36.0	10		06/11/15 21:38	637-92-3	
Methyl-tert-butyl ether	**42.5J**	ug/L	50.0	17.0	10		06/11/15 21:38	1634-04-4	
Naphthalene	**79.5**	ug/L	50.0	20.0	10		06/11/15 21:38	91-20-3	
Toluene	**159**	ug/L	50.0	16.0	10		06/11/15 21:38	108-88-3	
Xylene (Total)	**1620**	ug/L	100	27.0	10		06/11/15 21:38	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	121	%	70-130		10		06/11/15 21:38	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%	70-130		10		06/11/15 21:38	17060-07-0	
Toluene-d8 (S)	102	%	70-130		10		06/11/15 21:38	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-TW1 **Lab ID: 92253873009** Collected: 06/09/15 12:33 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/12/15 00:45	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	60	%	60-140		1	06/11/15 15:47	06/12/15 00:45	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 19:22	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 19:22	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 19:22	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 19:22	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 19:22	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 19:22	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 19:22	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:22	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 19:22	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 19:22	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 19:22	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:22	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 19:22	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 19:22	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 19:22	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	125	%	70-130		1		06/11/15 19:22	460-00-4	
1,2-Dichloroethane-d4 (S)	121	%	70-130		1		06/11/15 19:22	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		06/11/15 19:22	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: Trip Blank **Lab ID: 92253873010** Collected: 06/09/15 00:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/17/15 15:32	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/17/15 15:32	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/17/15 15:32	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/17/15 15:32	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/17/15 15:32	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/17/15 15:32	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/17/15 15:32	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/17/15 15:32	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/17/15 15:32	64-17-5	L3
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/17/15 15:32	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/17/15 15:32	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/17/15 15:32	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/17/15 15:32	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/17/15 15:32	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/17/15 15:32	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		1		06/17/15 15:32	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		06/17/15 15:32	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/17/15 15:32	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253873

Sample: 02567-WSW-1 **Lab ID: 92253873011** Collected: 06/08/15 12:40 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:47	06/12/15 01:26	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	92	%	60-140		1	06/11/15 15:47	06/12/15 01:26	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 19:39	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 19:39	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 19:39	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 19:39	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 19:39	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 19:39	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 19:39	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:39	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 19:39	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 19:39	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 19:39	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:39	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 19:39	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 19:39	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 19:39	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	125	%	70-130		1		06/11/15 19:39	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	70-130		1		06/11/15 19:39	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/11/15 19:39	2037-26-5	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

QC Batch: MSV/32097 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253873001, 92253873002, 92253873003, 92253873004, 92253873005, 92253873006, 92253873007, 92253873008, 92253873009, 92253873011

METHOD BLANK: 1482234 Matrix: Water
Associated Lab Samples: 92253873001, 92253873002, 92253873003, 92253873004, 92253873005, 92253873006, 92253873007, 92253873008, 92253873009, 92253873011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/11/15 16:15	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/11/15 16:15	
Benzene	ug/L	ND	5.0	06/11/15 16:15	
Diisopropyl ether	ug/L	ND	5.0	06/11/15 16:15	
Ethanol	ug/L	ND	200	06/11/15 16:15	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/11/15 16:15	
Ethylbenzene	ug/L	ND	5.0	06/11/15 16:15	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/11/15 16:15	
Naphthalene	ug/L	ND	5.0	06/11/15 16:15	
tert-Amyl Alcohol	ug/L	ND	100	06/11/15 16:15	
tert-Amylmethyl ether	ug/L	ND	10.0	06/11/15 16:15	
tert-Butyl Alcohol	ug/L	ND	100	06/11/15 16:15	
tert-Butyl Formate	ug/L	ND	50.0	06/11/15 16:15	
Toluene	ug/L	ND	5.0	06/11/15 16:15	
Xylene (Total)	ug/L	ND	10.0	06/11/15 16:15	
1,2-Dichloroethane-d4 (S)	%	124	70-130	06/11/15 16:15	
4-Bromofluorobenzene (S)	%	124	70-130	06/11/15 16:15	
Toluene-d8 (S)	%	100	70-130	06/11/15 16:15	

LABORATORY CONTROL SAMPLE: 1482235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	51.1	102	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	935	94	70-130	
Benzene	ug/L	50	44.6	89	70-130	
Diisopropyl ether	ug/L	50	45.8	92	70-130	
Ethanol	ug/L	2000	2010	100	70-130	
Ethyl-tert-butyl ether	ug/L	100	104	104	70-130	
Ethylbenzene	ug/L	50	45.1	90	70-130	
Methyl-tert-butyl ether	ug/L	50	47.4	95	70-130	
Naphthalene	ug/L	50	39.3	79	70-130	
tert-Amyl Alcohol	ug/L	1000	1070	107	70-130	
tert-Amylmethyl ether	ug/L	100	95.2	95	70-130	
tert-Butyl Alcohol	ug/L	500	550	110	70-130	
tert-Butyl Formate	ug/L	400	402	100	70-130	
Toluene	ug/L	50	44.2	88	70-130	
Xylene (Total)	ug/L	150	142	95	70-130	
1,2-Dichloroethane-d4 (S)	%			116	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

LABORATORY CONTROL SAMPLE: 1482235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			111	70-130	
Toluene-d8 (S)	%			96	70-130	

MATRIX SPIKE SAMPLE: 1482236

Parameter	Units	92253875010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	21.1	105	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	353	88	70-130	
Benzene	ug/L	ND	20	17.3	86	70-130	
Diisopropyl ether	ug/L	ND	20	15.8	79	70-130	
Ethanol	ug/L	ND	800	753	94	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	36.2	91	70-130	
Ethylbenzene	ug/L	ND	20	18.2	91	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	17.6	88	70-130	
Naphthalene	ug/L	ND	20	14.3	71	70-130	
tert-Amyl Alcohol	ug/L	ND	400	385	96	70-130	
tert-Amylmethyl ether	ug/L	ND	40	34.0	85	70-130	
tert-Butyl Alcohol	ug/L	ND	200	299	150	70-130	M1
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	16.4	82	70-130	
1,2-Dichloroethane-d4 (S)	%				119	70-130	
4-Bromofluorobenzene (S)	%				115	70-130	
Toluene-d8 (S)	%				92	70-130	

SAMPLE DUPLICATE: 1482237

Parameter	Units	92253875011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	129	130	1		
4-Bromofluorobenzene (S)	%	126	127	0		

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REPORT OF LABORATORY ANALYSIS

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

SAMPLE DUPLICATE: 1482237

Parameter	Units	92253875011 Result	Dup Result	RPD	Max RPD	Qualifiers
Toluene-d8 (S)	%	102	103	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

QC Batch: MSV/32171 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253873010

METHOD BLANK: 1486869 Matrix: Water
Associated Lab Samples: 92253873010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/17/15 13:33	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/17/15 13:33	
Benzene	ug/L	ND	5.0	06/17/15 13:33	
Diisopropyl ether	ug/L	ND	5.0	06/17/15 13:33	
Ethanol	ug/L	ND	200	06/17/15 13:33	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/17/15 13:33	
Ethylbenzene	ug/L	ND	5.0	06/17/15 13:33	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/17/15 13:33	
Naphthalene	ug/L	ND	5.0	06/17/15 13:33	
tert-Amyl Alcohol	ug/L	ND	100	06/17/15 13:33	
tert-Amylmethyl ether	ug/L	ND	10.0	06/17/15 13:33	
tert-Butyl Alcohol	ug/L	ND	100	06/17/15 13:33	
tert-Butyl Formate	ug/L	ND	50.0	06/17/15 13:33	
Toluene	ug/L	ND	5.0	06/17/15 13:33	
Xylene (Total)	ug/L	ND	10.0	06/17/15 13:33	
1,2-Dichloroethane-d4 (S)	%	101	70-130	06/17/15 13:33	
4-Bromofluorobenzene (S)	%	104	70-130	06/17/15 13:33	
Toluene-d8 (S)	%	103	70-130	06/17/15 13:33	

LABORATORY CONTROL SAMPLE: 1486870

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	43.7	87	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1160	116	70-130	
Benzene	ug/L	50	48.2	96	70-130	
Diisopropyl ether	ug/L	50	48.4	97	70-130	
Ethanol	ug/L	2000	3170	158	70-130	L0
Ethyl-tert-butyl ether	ug/L	100	105	105	70-130	
Ethylbenzene	ug/L	50	45.9	92	70-130	
Methyl-tert-butyl ether	ug/L	50	46.8	94	70-130	
Naphthalene	ug/L	50	50.6	101	70-130	
tert-Amyl Alcohol	ug/L	1000	1050	105	70-130	
tert-Amylmethyl ether	ug/L	100	98.1	98	70-130	
tert-Butyl Alcohol	ug/L	500	529	106	70-130	
tert-Butyl Formate	ug/L	400	424	106	70-130	
Toluene	ug/L	50	45.6	91	70-130	
Xylene (Total)	ug/L	150	138	92	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			98	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

SAMPLE DUPLICATE: 1486872

Parameter	Units	92253889011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	101	101	1		
4-Bromofluorobenzene (S)	%	103	103	1		
Toluene-d8 (S)	%	102	104	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253873

QC Batch: OEXT/35689 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92253873001, 92253873002, 92253873003, 92253873004, 92253873005, 92253873006, 92253873007, 92253873008, 92253873009, 92253873011

METHOD BLANK: 1481887 Matrix: Water
Associated Lab Samples: 92253873001, 92253873002, 92253873003, 92253873004, 92253873005, 92253873006, 92253873007, 92253873008, 92253873009, 92253873011

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	06/11/15 17:36	
1-Chloro-2-bromopropane (S)	%	110	60-140	06/11/15 17:36	

LABORATORY CONTROL SAMPLE & LCSD: 1481888 1481889

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.24	0.27	86	96	60-140	13	20	
1-Chloro-2-bromopropane (S)	%				100	103	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1481890 1481891

Parameter	Units	92253690011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.33	0.33	116	118	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						116	119	60-140			

SAMPLE DUPLICATE: 1481892

Parameter	Units	92253690012 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	99	96	2		

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QUALIFIERS

Project: Rhodesway North
Pace Project No.: 92253873

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North
Pace Project No.: 92253873

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92253873001	**02567-MW4**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873002	**02567-MW5**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873003	**02567-MW6**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873004	**02567-MW16**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873005	**02567-MW21**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873006	**02567-MW22**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873007	**02567-RW4**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873008	**02567-RW9**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873009	**02567-TW1**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873011	**02567-WSW-1**	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253873001	**02567-MW4**	EPA 8260	MSV/32097		
92253873002	**02567-MW5**	EPA 8260	MSV/32097		
92253873003	**02567-MW6**	EPA 8260	MSV/32097		
92253873004	**02567-MW16**	EPA 8260	MSV/32097		
92253873005	**02567-MW21**	EPA 8260	MSV/32097		
92253873006	**02567-MW22**	EPA 8260	MSV/32097		
92253873007	**02567-RW4**	EPA 8260	MSV/32097		
92253873008	**02567-RW9**	EPA 8260	MSV/32097		
92253873009	**02567-TW1**	EPA 8260	MSV/32097		
92253873010	**Trip Blank**	EPA 8260	MSV/32171		
92253873011	**02567-WSW-1**	EPA 8260	MSV/32097		

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Pace Analytical	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: May 16, 2015 Page 1 of 2*
	Document Number: **F-CHR-CS-003-rev.16**	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS

* Page 2 of 2 is for Internal Use Only

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1401 **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Temp Correction Factor **T1401** No Correction

Corrected Cooler Temp.: 2.7 °C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Comments:

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: MLP 4/8

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix:_____	☐Yes ☑No ☐N/A	12. #1 bottles say 5:02 pm time to match COC for #1
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13. * received WSW1- not on COC 4/10/18
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: Date: 4/10

SRF Review: Date: 4/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Place label here

WO# : 92253873

92253873

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of 1905748

Section A Required Client Information:

Company: ECS
Address: 13504 South Pointe
Charlotte, NC 28273
Email To: NFrance@ECSconsult.com
Phone: 7045832711 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: Noelle France
Copy To:
Purchase Order No.: 14-215778
Project Name: Rhodesway North
Project Number: 14-215778

Section C Invoice Information:

Attention: accounting
Company Name: ECS
Address: Agawam, MA
Pace Quote Reference:
Pace Project Manager:
Pace Profile #: 2915-3

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER

Site Location STATE: SC

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 BTEX MN	1,2-DCA	Oxygenates	EDB soil	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	02567-MW4	WT	G			6/9/15	1102						X					X	X	X	X		
2	02567-MW5	"	"			"	1300						"					"	"	"	"		
3	02567-MW6	"	"			"	1131						"										
4	02567-MW16	"	"			"	1330						"										
5	02567-MW21	"	"			"	0900						"										
6	02567-MW22	"	"			"	0930						"										
7	02567-RW4	"	"			"	1551						"										
8	02567-RW9	"	"			"	1435						"										
9	02567-TW1	"	"			"	1233						"										
10	Trip blank	"	"			"	—						"										
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Please report J values	K. Wright / ECS	6/9/15	2030	ECS office	6/9/15	2030	
	ECS office			B Moody - Pace	06-10-15	14:20	
	B Moody	06-10-15	17:20	[illegible]	6-10	17-20	2.8 Y N Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: K. Wright

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 6/9/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Taylor Ezell - Re: Rhodesway North project

From: Noelle France <nfrance@ecsconsult.com>
To: Taylor Ezell <Taylor.Ezell@pacelabs.com>
Date: 6/10/2015 12:34 PM
Subject: Re: Rhodesway North project

Taylor, please check the Chain of Custody for the set of Rhodesway North samples that was picked up this morning. My technician just let me know that sample #WSW-1 collected at 12:40 on 6/8/15 may have been left off of the Chain of Custody. If the sample is found with the others, please go ahead and analyze it. Thanks

Noelle A. France, P.G.
Project Manager
Environmental Compliance Services, Inc.
13504 South Point Boulevard, Suite F
Charlotte, North Carolina 28273
Office:704-583-2711
Fax: 704-583-2744
Cell: 704-923-3757
nfrance@ecsconsult.com
www.ecsconsult.com

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On Wed, Jun 10, 2015 at 11:33 AM, Noelle France <nfrance@ecsconsult.com> wrote:

> Thanks!

Noelle A. France, P.G.
Project Manager
Environmental Compliance Services, Inc.
13504 South Point Boulevard, Suite F
Charlotte, North Carolina 28273
Office:704-583-2711
Fax: 704-583-2744
Cell: 704-923-3757
nfrance@ecsconsult.com
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(704)875-9092

June 16, 2015

Noelle France
Environmental Compliance Services
13504 South Point Blvd.
Unit F
Charlotte, NC 28273

RE: Project: Rhodesway North
Pace Project No.: 92253875

Dear Noelle France:
Enclosed are the analytical results for sample(s) received by the laboratory on June 10, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
Project Manager

Enclosures

cc: Aaron Williamson, Environmental Compliance Services

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CERTIFICATIONS

Project: Rhodesway North
Pace Project No.: 92253875

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

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SAMPLE SUMMARY

Project: Rhodesway North
Pace Project No.: 92253875

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92253875001	02567-SW1	Water	06/08/15 13:15	06/10/15 17:20
92253875002	02567-SW2	Water	06/08/15 13:38	06/10/15 17:20
92253875003	02567-MW2	Water	06/09/15 09:20	06/10/15 17:20
92253875004	02567-MW3	Water	06/09/15 10:00	06/10/15 17:20
92253875005	02567-MW7	Water	06/09/15 12:55	06/10/15 17:20
92253875006	02567-MW8	Water	06/09/15 09:40	06/10/15 17:20
92253875007	02567-MW11	Water	06/09/15 16:30	06/10/15 17:20
92253875008	02567-MW14	Water	06/08/15 16:15	06/10/15 17:20
92253875009	02567-MW15	Water	06/08/15 16:30	06/10/15 17:20
92253875010	02567-MW18	Water	06/08/15 15:48	06/10/15 17:20
92253875011	02567-MW19	Water	06/08/15 14:59	06/10/15 17:20
92253875012	02567-MW20	Water	06/09/15 16:00	06/10/15 17:20
92253875013	02567-RW5	Water	06/09/15 11:25	06/10/15 17:20
92253875014	02567-RW8	Water	06/09/15 14:56	06/10/15 17:20
92253875015	02567-RW10	Water	06/09/15 12:10	06/10/15 17:20
92253875016	02567-TW2	Water	06/09/15 14:10	06/10/15 17:20
92253875017	02567-FB1	Water	06/08/15 17:10	06/10/15 17:20
92253875018	02567-FB2	Water	06/09/15 12:20	06/10/15 17:20
92253875019	02567-Duplicate	Water	06/09/15 16:00	06/10/15 17:20

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92253875

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92253875001	02567-SW1	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875002	02567-SW2	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875003	02567-MW2	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875004	02567-MW3	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875005	02567-MW7	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875006	02567-MW8	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875007	02567-MW11	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875008	02567-MW14	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875009	02567-MW15	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875010	02567-MW18	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875011	02567-MW19	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875012	02567-MW20	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875013	02567-RW5	EPA 8011	RES	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92253875014	02567-RW8	EPA 8011	RES	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92253875015	02567-RW10	EPA 8011	RES	2	PASI-C
		EPA 8260	GAW	18	PASI-C
92253875016	02567-TW2	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875017	02567-FB1	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875018	02567-FB2	EPA 8011	RES	2	PASI-C
		EPA 8260	CCL	18	PASI-C
92253875019	02567-Duplicate	EPA 8011	RES	2	PASI-C

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SAMPLE ANALYTE COUNT

Project: Rhodesway North
Pace Project No.: 92253875

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	GAW	18	PASI-C

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-SW1 **Lab ID: 92253875001** Collected: 06/08/15 13:15 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:48	06/12/15 01:47	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	97	%	60-140		1	06/11/15 15:48	06/12/15 01:47	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 19:56	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 19:56	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 19:56	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 19:56	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 19:56	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 19:56	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 19:56	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:56	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 19:56	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 19:56	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 19:56	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 19:56	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 19:56	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 19:56	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 19:56	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	126	%	70-130		1		06/11/15 19:56	460-00-4	
1,2-Dichloroethane-d4 (S)	124	%	70-130		1		06/11/15 19:56	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/11/15 19:56	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-SW2 **Lab ID: 92253875002** Collected: 06/08/15 13:38 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:48	06/12/15 02:07	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	105	%	60-140		1	06/11/15 15:48	06/12/15 02:07	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 22:46	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 22:46	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 22:46	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 22:46	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 22:46	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 22:46	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 22:46	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 22:46	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 22:46	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 22:46	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 22:46	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 22:46	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 22:46	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 22:46	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 22:46	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	121	%	70-130		1		06/11/15 22:46	460-00-4	
1,2-Dichloroethane-d4 (S)	120	%	70-130		1		06/11/15 22:46	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		06/11/15 22:46	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW2 **Lab ID: 92253875003** Collected: 06/09/15 09:20 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:49	06/12/15 03:48	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	94	%	60-140		1	06/11/15 15:49	06/12/15 03:48	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**147**	ug/L	100	76.8	1		06/11/15 23:03	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 23:03	994-05-8	
Benzene	**21.9**	ug/L	5.0	1.7	1		06/11/15 23:03	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 23:03	624-95-3	
tert-Butyl Alcohol	**149**	ug/L	100	57.7	1		06/11/15 23:03	75-65-0	M1
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 23:03	762-75-4	M1
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 23:03	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 23:03	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 23:03	64-17-5	
Ethylbenzene	**2.4J**	ug/L	5.0	1.6	1		06/11/15 23:03	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 23:03	637-92-3	
Methyl-tert-butyl ether	**7.7**	ug/L	5.0	1.7	1		06/11/15 23:03	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 23:03	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 23:03	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 23:03	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	121	%	70-130		1		06/11/15 23:03	460-00-4	
1,2-Dichloroethane-d4 (S)	119	%	70-130		1		06/11/15 23:03	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		06/11/15 23:03	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW3 **Lab ID: 92253875004** Collected: 06/09/15 10:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:49	06/12/15 04:49	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	06/11/15 15:49	06/12/15 04:49	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 23:20	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 23:20	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 23:20	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 23:20	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 23:20	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 23:20	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 23:20	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 23:20	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 23:20	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 23:20	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 23:20	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 23:20	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 23:20	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 23:20	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 23:20	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	123	%	70-130		1		06/11/15 23:20	460-00-4	
1,2-Dichloroethane-d4 (S)	122	%	70-130		1		06/11/15 23:20	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		06/11/15 23:20	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW7 **Lab ID: 92253875005** Collected: 06/09/15 12:55 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:49	06/12/15 05:09	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	100	%	60-140		1	06/11/15 15:49	06/12/15 05:09	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1640**	ug/L	500	384	5		06/12/15 00:27	75-85-4	
tert-Amylmethyl ether	ND	ug/L	50.0	17.0	5		06/12/15 00:27	994-05-8	
Benzene	**551**	ug/L	25.0	8.5	5		06/12/15 00:27	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	500	160	5		06/12/15 00:27	624-95-3	
tert-Butyl Alcohol	**6920**	ug/L	500	288	5		06/12/15 00:27	75-65-0	
tert-Butyl Formate	ND	ug/L	250	36.5	5		06/12/15 00:27	762-75-4	
1,2-Dichloroethane	ND	ug/L	25.0	9.0	5		06/12/15 00:27	107-06-2	
Diisopropyl ether	ND	ug/L	25.0	8.5	5		06/12/15 00:27	108-20-3	
Ethanol	ND	ug/L	1000	689	5		06/12/15 00:27	64-17-5	
Ethylbenzene	**25.1**	ug/L	25.0	8.0	5		06/12/15 00:27	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	50.0	18.0	5		06/12/15 00:27	637-92-3	
Methyl-tert-butyl ether	**473**	ug/L	25.0	8.5	5		06/12/15 00:27	1634-04-4	
Naphthalene	**42.3**	ug/L	25.0	10.0	5		06/12/15 00:27	91-20-3	
Toluene	ND	ug/L	25.0	8.0	5		06/12/15 00:27	108-88-3	
Xylene (Total)	**167**	ug/L	50.0	13.5	5		06/12/15 00:27	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	119	%	70-130		5		06/12/15 00:27	460-00-4	
1,2-Dichloroethane-d4 (S)	123	%	70-130		5		06/12/15 00:27	17060-07-0	
Toluene-d8 (S)	95	%	70-130		5		06/12/15 00:27	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW8 **Lab ID: 92253875006** Collected: 06/09/15 09:40 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:49	06/12/15 04:09	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	06/11/15 15:49	06/12/15 04:09	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**171**	ug/L	100	76.8	1		06/13/15 03:43	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/13/15 03:43	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/13/15 03:43	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/13/15 03:43	624-95-3	
tert-Butyl Alcohol	**492**	ug/L	100	57.7	1		06/13/15 03:43	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/13/15 03:43	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/13/15 03:43	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/13/15 03:43	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/13/15 03:43	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/13/15 03:43	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/13/15 03:43	637-92-3	
Methyl-tert-butyl ether	**120**	ug/L	5.0	1.7	1		06/13/15 03:43	1634-04-4	
Naphthalene	**2.5J**	ug/L	5.0	2.0	1		06/13/15 03:43	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/13/15 03:43	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/13/15 03:43	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	107	%	70-130		1		06/13/15 03:43	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		06/13/15 03:43	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		06/13/15 03:43	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW11 **Lab ID: 92253875007** Collected: 06/09/15 16:30 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:50	06/12/15 05:50	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	113	%	60-140		1	06/11/15 15:50	06/12/15 05:50	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	20000	15400	200		06/12/15 22:03	75-85-4	
tert-Amylmethyl ether	ND	ug/L	2000	680	200		06/12/15 22:03	994-05-8	
Benzene	**15100**	ug/L	1000	340	200		06/12/15 22:03	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	20000	6420	200		06/12/15 22:03	624-95-3	
tert-Butyl Alcohol	ND	ug/L	20000	11500	200		06/12/15 22:03	75-65-0	
tert-Butyl Formate	ND	ug/L	10000	1460	200		06/12/15 22:03	762-75-4	
1,2-Dichloroethane	ND	ug/L	1000	360	200		06/12/15 22:03	107-06-2	
Diisopropyl ether	ND	ug/L	1000	340	200		06/12/15 22:03	108-20-3	
Ethanol	ND	ug/L	40000	27600	200		06/12/15 22:03	64-17-5	
Ethylbenzene	**2960**	ug/L	1000	320	200		06/12/15 22:03	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	2000	720	200		06/12/15 22:03	637-92-3	
Methyl-tert-butyl ether	**14600**	ug/L	1000	340	200		06/12/15 22:03	1634-04-4	
Naphthalene	**925J**	ug/L	1000	400	200		06/12/15 22:03	91-20-3	
Toluene	**14800**	ug/L	1000	320	200		06/12/15 22:03	108-88-3	
Xylene (Total)	**13400**	ug/L	2000	540	200		06/12/15 22:03	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	110	%	70-130		200		06/12/15 22:03	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-130		200		06/12/15 22:03	17060-07-0	
Toluene-d8 (S)	101	%	70-130		200		06/12/15 22:03	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW14 **Lab ID: 92253875008** Collected: 06/08/15 16:15 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:50	06/12/15 06:30	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	90	%	60-140		1	06/11/15 15:50	06/12/15 06:30	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 23:54	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 23:54	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 23:54	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 23:54	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 23:54	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 23:54	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 23:54	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 23:54	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 23:54	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 23:54	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 23:54	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 23:54	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 23:54	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 23:54	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 23:54	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	126	%	70-130		1		06/11/15 23:54	460-00-4	
1,2-Dichloroethane-d4 (S)	126	%	70-130		1		06/11/15 23:54	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		06/11/15 23:54	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW15 **Lab ID: 92253875009** Collected: 06/08/15 16:30 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:50	06/12/15 06:50	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	98	%	60-140		1	06/11/15 15:50	06/12/15 06:50	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/12/15 00:11	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/12/15 00:11	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/12/15 00:11	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/12/15 00:11	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/12/15 00:11	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/12/15 00:11	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/12/15 00:11	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/12/15 00:11	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/12/15 00:11	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/12/15 00:11	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/12/15 00:11	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/12/15 00:11	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/12/15 00:11	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/12/15 00:11	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/12/15 00:11	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	125	%	70-130		1		06/12/15 00:11	460-00-4	
1,2-Dichloroethane-d4 (S)	128	%	70-130		1		06/12/15 00:11	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		06/12/15 00:11	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW18 **Lab ID: 92253875010** Collected: 06/08/15 15:48 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:50	06/12/15 07:10	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	103	%	60-140		1	06/11/15 15:50	06/12/15 07:10	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 20:13	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 20:13	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 20:13	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 20:13	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 20:13	75-65-0	M1
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 20:13	762-75-4	M1
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 20:13	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 20:13	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 20:13	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 20:13	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 20:13	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 20:13	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 20:13	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 20:13	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 20:13	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	126	%	70-130		1		06/11/15 20:13	460-00-4	
1,2-Dichloroethane-d4 (S)	127	%	70-130		1		06/11/15 20:13	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/11/15 20:13	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW19 **Lab ID: 92253875011** Collected: 06/08/15 14:59 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:50	06/12/15 07:30	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	111	%	60-140		1	06/11/15 15:50	06/12/15 07:30	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 20:30	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 20:30	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 20:30	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 20:30	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 20:30	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 20:30	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 20:30	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 20:30	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 20:30	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 20:30	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 20:30	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 20:30	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 20:30	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 20:30	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 20:30	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	126	%	70-130		1		06/11/15 20:30	460-00-4	
1,2-Dichloroethane-d4 (S)	129	%	70-130		1		06/11/15 20:30	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		06/11/15 20:30	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-MW20 **Lab ID: 92253875012** Collected: 06/09/15 16:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:50	06/12/15 07:51	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	101	%	60-140		1	06/11/15 15:50	06/12/15 07:51	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**17600**	ug/L	10000	7680	100		06/12/15 20:38	75-85-4	
tert-Amylmethyl ether	ND	ug/L	1000	340	100		06/12/15 20:38	994-05-8	
Benzene	ND	ug/L	500	170	100		06/12/15 20:38	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	10000	3210	100		06/12/15 20:38	624-95-3	
tert-Butyl Alcohol	**30300**	ug/L	10000	5770	100		06/12/15 20:38	75-65-0	
tert-Butyl Formate	ND	ug/L	5000	730	100		06/12/15 20:38	762-75-4	
1,2-Dichloroethane	ND	ug/L	500	180	100		06/12/15 20:38	107-06-2	
Diisopropyl ether	ND	ug/L	500	170	100		06/12/15 20:38	108-20-3	
Ethanol	ND	ug/L	20000	13800	100		06/12/15 20:38	64-17-5	
Ethylbenzene	ND	ug/L	500	160	100		06/12/15 20:38	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	1000	360	100		06/12/15 20:38	637-92-3	
Methyl-tert-butyl ether	**6460**	ug/L	500	170	100		06/12/15 20:38	1634-04-4	
Naphthalene	**207J**	ug/L	500	200	100		06/12/15 20:38	91-20-3	
Toluene	ND	ug/L	500	160	100		06/12/15 20:38	108-88-3	
Xylene (Total)	ND	ug/L	1000	270	100		06/12/15 20:38	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	111	%	70-130		100		06/12/15 20:38	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	70-130		100		06/12/15 20:38	17060-07-0	
Toluene-d8 (S)	102	%	70-130		100		06/12/15 20:38	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-RW5 **Lab ID: 92253875013** Collected: 06/09/15 11:25 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:50	06/12/15 08:11	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	108	%	60-140		1	06/11/15 15:50	06/12/15 08:11	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	200	154	2		06/16/15 12:36	75-85-4	
tert-Amylmethyl ether	ND	ug/L	20.0	6.8	2		06/16/15 12:36	994-05-8	
Benzene	**32.1**	ug/L	10.0	3.4	2		06/16/15 12:36	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	200	64.2	2		06/16/15 12:36	624-95-3	
tert-Butyl Alcohol	ND	ug/L	200	115	2		06/16/15 12:36	75-65-0	
tert-Butyl Formate	ND	ug/L	100	14.6	2		06/16/15 12:36	762-75-4	
1,2-Dichloroethane	ND	ug/L	10.0	3.6	2		06/16/15 12:36	107-06-2	
Diisopropyl ether	ND	ug/L	10.0	3.4	2		06/16/15 12:36	108-20-3	
Ethanol	ND	ug/L	400	276	2		06/16/15 12:36	64-17-5	
Ethylbenzene	**217**	ug/L	10.0	3.2	2		06/16/15 12:36	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	20.0	7.2	2		06/16/15 12:36	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	10.0	3.4	2		06/16/15 12:36	1634-04-4	
Naphthalene	**109**	ug/L	10.0	4.0	2		06/16/15 12:36	91-20-3	
Toluene	**18.2**	ug/L	10.0	3.2	2		06/16/15 12:36	108-88-3	
Xylene (Total)	**456**	ug/L	20.0	5.4	2		06/16/15 12:36	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		2		06/16/15 12:36	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130		2		06/16/15 12:36	17060-07-0	
Toluene-d8 (S)	99	%	70-130		2		06/16/15 12:36	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-RW8 **Lab ID: 92253875014** Collected: 06/09/15 14:56 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:51	06/12/15 08:31	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	87	%	60-140		1	06/11/15 15:51	06/12/15 08:31	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**1810J**	ug/L	2000	1540	20		06/16/15 12:52	75-85-4	
tert-Amylmethyl ether	ND	ug/L	200	68.0	20		06/16/15 12:52	994-05-8	
Benzene	**1560**	ug/L	100	34.0	20		06/16/15 12:52	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	2000	642	20		06/16/15 12:52	624-95-3	
tert-Butyl Alcohol	**4370**	ug/L	2000	1150	20		06/16/15 12:52	75-65-0	
tert-Butyl Formate	ND	ug/L	1000	146	20		06/16/15 12:52	762-75-4	
1,2-Dichloroethane	ND	ug/L	100	36.0	20		06/16/15 12:52	107-06-2	
Diisopropyl ether	ND	ug/L	100	34.0	20		06/16/15 12:52	108-20-3	
Ethanol	ND	ug/L	4000	2760	20		06/16/15 12:52	64-17-5	
Ethylbenzene	**382**	ug/L	100	32.0	20		06/16/15 12:52	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	200	72.0	20		06/16/15 12:52	637-92-3	
Methyl-tert-butyl ether	**2320**	ug/L	100	34.0	20		06/16/15 12:52	1634-04-4	
Naphthalene	**174**	ug/L	100	40.0	20		06/16/15 12:52	91-20-3	
Toluene	**2120**	ug/L	100	32.0	20		06/16/15 12:52	108-88-3	
Xylene (Total)	**1900**	ug/L	200	54.0	20		06/16/15 12:52	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	87	%	70-130		20		06/16/15 12:52	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130		20		06/16/15 12:52	17060-07-0	
Toluene-d8 (S)	101	%	70-130		20		06/16/15 12:52	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-RW10 **Lab ID: 92253875015** Collected: 06/09/15 12:10 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:51	06/12/15 08:51	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	100	%	60-140		1	06/11/15 15:51	06/12/15 08:51	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**612**	ug/L	250	192	2.5		06/16/15 13:08	75-85-4	
tert-Amylmethyl ether	ND	ug/L	25.0	8.5	2.5		06/16/15 13:08	994-05-8	
Benzene	**162**	ug/L	12.5	4.2	2.5		06/16/15 13:08	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	250	80.2	2.5		06/16/15 13:08	624-95-3	
tert-Butyl Alcohol	**1430**	ug/L	250	144	2.5		06/16/15 13:08	75-65-0	
tert-Butyl Formate	ND	ug/L	125	18.2	2.5		06/16/15 13:08	762-75-4	
1,2-Dichloroethane	ND	ug/L	12.5	4.5	2.5		06/16/15 13:08	107-06-2	
Diisopropyl ether	ND	ug/L	12.5	4.2	2.5		06/16/15 13:08	108-20-3	
Ethanol	ND	ug/L	500	344	2.5		06/16/15 13:08	64-17-5	
Ethylbenzene	**15.6**	ug/L	12.5	4.0	2.5		06/16/15 13:08	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	25.0	9.0	2.5		06/16/15 13:08	637-92-3	
Methyl-tert-butyl ether	**251**	ug/L	12.5	4.2	2.5		06/16/15 13:08	1634-04-4	
Naphthalene	**29.5**	ug/L	12.5	5.0	2.5		06/16/15 13:08	91-20-3	
Toluene	ND	ug/L	12.5	4.0	2.5		06/16/15 13:08	108-88-3	
Xylene (Total)	ND	ug/L	25.0	6.8	2.5		06/16/15 13:08	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	89	%	70-130		2.5		06/16/15 13:08	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		2.5		06/16/15 13:08	17060-07-0	
Toluene-d8 (S)	98	%	70-130		2.5		06/16/15 13:08	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-TW2 **Lab ID: 92253875016** Collected: 06/09/15 14:10 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:51	06/12/15 09:11	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	105	%	60-140		1	06/11/15 15:51	06/12/15 09:11	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/12/15 20:21	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/12/15 20:21	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/12/15 20:21	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/12/15 20:21	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/12/15 20:21	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/12/15 20:21	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/12/15 20:21	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/12/15 20:21	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/12/15 20:21	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/12/15 20:21	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/12/15 20:21	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/12/15 20:21	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/12/15 20:21	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/12/15 20:21	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/12/15 20:21	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	110	%	70-130		1		06/12/15 20:21	460-00-4	
1,2-Dichloroethane-d4 (S)	115	%	70-130		1		06/12/15 20:21	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		06/12/15 20:21	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-FB1 **Lab ID: 92253875017** Collected: 06/08/15 17:10 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:51	06/12/15 09:31	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	104	%	60-140		1	06/11/15 15:51	06/12/15 09:31	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 16:49	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 16:49	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 16:49	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 16:49	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 16:49	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 16:49	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 16:49	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 16:49	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 16:49	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 16:49	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 16:49	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 16:49	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 16:49	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 16:49	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 16:49	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	124	%	70-130		1		06/11/15 16:49	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	70-130		1		06/11/15 16:49	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		06/11/15 16:49	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-FB2 **Lab ID: 92253875018** Collected: 06/09/15 12:20 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.019	0.019	1	06/11/15 15:51	06/12/15 09:51	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	115	%	60-140		1	06/11/15 15:51	06/12/15 09:51	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		06/11/15 17:06	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		06/11/15 17:06	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		06/11/15 17:06	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		06/11/15 17:06	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		06/11/15 17:06	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		06/11/15 17:06	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		06/11/15 17:06	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		06/11/15 17:06	108-20-3	
Ethanol	ND	ug/L	200	138	1		06/11/15 17:06	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		06/11/15 17:06	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		06/11/15 17:06	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		06/11/15 17:06	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		06/11/15 17:06	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		06/11/15 17:06	108-88-3	
Xylene (Total)	ND	ug/L	10.0	2.7	1		06/11/15 17:06	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	124	%	70-130		1		06/11/15 17:06	460-00-4	
1,2-Dichloroethane-d4 (S)	125	%	70-130		1		06/11/15 17:06	17060-07-0	
Toluene-d8 (S)	100	%	70-130		1		06/11/15 17:06	2037-26-5	

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ANALYTICAL RESULTS

Project: Rhodesway North
Pace Project No.: 92253875

Sample: 02567-Duplicate **Lab ID: 92253875019** Collected: 06/09/15 16:00 Received: 06/10/15 17:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	06/11/15 15:51	06/12/15 10:12	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	104	%	60-140		1	06/11/15 15:51	06/12/15 10:12	301-79-56	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**18100**	ug/L	5000	3840	50		06/16/15 13:24	75-85-4	
tert-Amylmethyl ether	ND	ug/L	500	170	50		06/16/15 13:24	994-05-8	
Benzene	ND	ug/L	250	85.0	50		06/16/15 13:24	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	5000	1600	50		06/16/15 13:24	624-95-3	
tert-Butyl Alcohol	**22100**	ug/L	5000	2880	50		06/16/15 13:24	75-65-0	
tert-Butyl Formate	ND	ug/L	2500	365	50		06/16/15 13:24	762-75-4	
1,2-Dichloroethane	ND	ug/L	250	90.0	50		06/16/15 13:24	107-06-2	
Diisopropyl ether	ND	ug/L	250	85.0	50		06/16/15 13:24	108-20-3	
Ethanol	ND	ug/L	10000	6890	50		06/16/15 13:24	64-17-5	
Ethylbenzene	ND	ug/L	250	80.0	50		06/16/15 13:24	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	500	180	50		06/16/15 13:24	637-92-3	
Methyl-tert-butyl ether	**4740**	ug/L	250	85.0	50		06/16/15 13:24	1634-04-4	
Naphthalene	ND	ug/L	250	100	50		06/16/15 13:24	91-20-3	
Toluene	ND	ug/L	250	80.0	50		06/16/15 13:24	108-88-3	
Xylene (Total)	ND	ug/L	500	135	50		06/16/15 13:24	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	87	%	70-130		50		06/16/15 13:24	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130		50		06/16/15 13:24	17060-07-0	
Toluene-d8 (S)	99	%	70-130		50		06/16/15 13:24	2037-26-5	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: MSV/32097 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253875001, 92253875010, 92253875011, 92253875017, 92253875018

METHOD BLANK: 1482234 Matrix: Water
Associated Lab Samples: 92253875001, 92253875010, 92253875011, 92253875017, 92253875018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/11/15 16:15	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/11/15 16:15	
Benzene	ug/L	ND	5.0	06/11/15 16:15	
Diisopropyl ether	ug/L	ND	5.0	06/11/15 16:15	
Ethanol	ug/L	ND	200	06/11/15 16:15	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/11/15 16:15	
Ethylbenzene	ug/L	ND	5.0	06/11/15 16:15	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/11/15 16:15	
Naphthalene	ug/L	ND	5.0	06/11/15 16:15	
tert-Amyl Alcohol	ug/L	ND	100	06/11/15 16:15	
tert-Amylmethyl ether	ug/L	ND	10.0	06/11/15 16:15	
tert-Butyl Alcohol	ug/L	ND	100	06/11/15 16:15	
tert-Butyl Formate	ug/L	ND	50.0	06/11/15 16:15	
Toluene	ug/L	ND	5.0	06/11/15 16:15	
Xylene (Total)	ug/L	ND	10.0	06/11/15 16:15	
1,2-Dichloroethane-d4 (S)	%	124	70-130	06/11/15 16:15	
4-Bromofluorobenzene (S)	%	124	70-130	06/11/15 16:15	
Toluene-d8 (S)	%	100	70-130	06/11/15 16:15	

LABORATORY CONTROL SAMPLE: 1482235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	51.1	102	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	935	94	70-130	
Benzene	ug/L	50	44.6	89	70-130	
Diisopropyl ether	ug/L	50	45.8	92	70-130	
Ethanol	ug/L	2000	2010	100	70-130	
Ethyl-tert-butyl ether	ug/L	100	104	104	70-130	
Ethylbenzene	ug/L	50	45.1	90	70-130	
Methyl-tert-butyl ether	ug/L	50	47.4	95	70-130	
Naphthalene	ug/L	50	39.3	79	70-130	
tert-Amyl Alcohol	ug/L	1000	1070	107	70-130	
tert-Amylmethyl ether	ug/L	100	95.2	95	70-130	
tert-Butyl Alcohol	ug/L	500	550	110	70-130	
tert-Butyl Formate	ug/L	400	402	100	70-130	
Toluene	ug/L	50	44.2	88	70-130	
Xylene (Total)	ug/L	150	142	95	70-130	
1,2-Dichloroethane-d4 (S)	%			116	70-130	
4-Bromofluorobenzene (S)	%			111	70-130	
Toluene-d8 (S)	%			96	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

MATRIX SPIKE SAMPLE: 1482236

Parameter	Units	92253875010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	21.1	105	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	353	88	70-130	
Benzene	ug/L	ND	20	17.3	86	70-130	
Diisopropyl ether	ug/L	ND	20	15.8	79	70-130	
Ethanol	ug/L	ND	800	753	94	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	36.2	91	70-130	
Ethylbenzene	ug/L	ND	20	18.2	91	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	17.6	88	70-130	
Naphthalene	ug/L	ND	20	14.3	71	70-130	
tert-Amyl Alcohol	ug/L	ND	400	385	96	70-130	
tert-Amylmethyl ether	ug/L	ND	40	34.0	85	70-130	
tert-Butyl Alcohol	ug/L	ND	200	299	150	70-130	M1
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	16.4	82	70-130	
1,2-Dichloroethane-d4 (S)	%				119	70-130	
4-Bromofluorobenzene (S)	%				115	70-130	
Toluene-d8 (S)	%				92	70-130	

SAMPLE DUPLICATE: 1482237

Parameter	Units	92253875011 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	129	130	1		
4-Bromofluorobenzene (S)	%	126	127	0		
Toluene-d8 (S)	%	102	103	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: MSV/32098 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253875002, 92253875003, 92253875004, 92253875005, 92253875008, 92253875009

METHOD BLANK: 1482251 Matrix: Water
Associated Lab Samples: 92253875002, 92253875003, 92253875004, 92253875005, 92253875008, 92253875009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/11/15 16:32	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/11/15 16:32	
Benzene	ug/L	ND	5.0	06/11/15 16:32	
Diisopropyl ether	ug/L	ND	5.0	06/11/15 16:32	
Ethanol	ug/L	ND	200	06/11/15 16:32	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/11/15 16:32	
Ethylbenzene	ug/L	ND	5.0	06/11/15 16:32	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/11/15 16:32	
Naphthalene	ug/L	ND	5.0	06/11/15 16:32	
tert-Amyl Alcohol	ug/L	ND	100	06/11/15 16:32	
tert-Amylmethyl ether	ug/L	ND	10.0	06/11/15 16:32	
tert-Butyl Alcohol	ug/L	ND	100	06/11/15 16:32	
tert-Butyl Formate	ug/L	ND	50.0	06/11/15 16:32	
Toluene	ug/L	ND	5.0	06/11/15 16:32	
Xylene (Total)	ug/L	ND	10.0	06/11/15 16:32	
1,2-Dichloroethane-d4 (S)	%	123	70-130	06/11/15 16:32	
4-Bromofluorobenzene (S)	%	123	70-130	06/11/15 16:32	
Toluene-d8 (S)	%	99	70-130	06/11/15 16:32	

LABORATORY CONTROL SAMPLE: 1482252

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	54.0	108	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	969	97	70-130	
Benzene	ug/L	50	46.9	94	70-130	
Diisopropyl ether	ug/L	50	48.7	97	70-130	
Ethanol	ug/L	2000	1880	94	70-130	
Ethyl-tert-butyl ether	ug/L	100	112	112	70-130	
Ethylbenzene	ug/L	50	48.0	96	70-130	
Methyl-tert-butyl ether	ug/L	50	51.4	103	70-130	
Naphthalene	ug/L	50	42.0	84	70-130	
tert-Amyl Alcohol	ug/L	1000	1100	110	70-130	
tert-Amylmethyl ether	ug/L	100	102	102	70-130	
tert-Butyl Alcohol	ug/L	500	575	115	70-130	
tert-Butyl Formate	ug/L	400	431	108	70-130	
Toluene	ug/L	50	46.2	92	70-130	
Xylene (Total)	ug/L	150	151	101	70-130	
1,2-Dichloroethane-d4 (S)	%			115	70-130	
4-Bromofluorobenzene (S)	%			113	70-130	
Toluene-d8 (S)	%			96	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

MATRIX SPIKE SAMPLE: 1482253

Parameter	Units	92253875003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	20.5	102	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	398	99	70-130	
Benzene	ug/L	21.9	20	38.5	83	70-130	
Diisopropyl ether	ug/L	ND	20	16.2	81	70-130	
Ethanol	ug/L	ND	800	846	104	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	37.2	93	70-130	
Ethylbenzene	ug/L	2.4J	20	22.2	99	70-130	
Methyl-tert-butyl ether	ug/L	7.7	20	26.5	94	70-130	
Naphthalene	ug/L	ND	20	17.9	86	70-130	
tert-Amyl Alcohol	ug/L	147	400	563	104	70-130	
tert-Amylmethyl ether	ug/L	ND	40	34.6	87	70-130	
tert-Butyl Alcohol	ug/L	149	200	470	161	70-130	M1
tert-Butyl Formate	ug/L	ND	160	ND	0	70-130	P5
Toluene	ug/L	ND	20	17.5	87	70-130	
1,2-Dichloroethane-d4 (S)	%				118	70-130	
4-Bromofluorobenzene (S)	%				116	70-130	
Toluene-d8 (S)	%				92	70-130	

SAMPLE DUPLICATE: 1482254

Parameter	Units	92253875004 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	122	124	2		
4-Bromofluorobenzene (S)	%	123	125	2		
Toluene-d8 (S)	%	99	99	0		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: MSV/32105 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253875007, 92253875012, 92253875016

METHOD BLANK: 1482818 Matrix: Water
Associated Lab Samples: 92253875007, 92253875012, 92253875016

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/12/15 16:24	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/12/15 16:24	
Benzene	ug/L	ND	5.0	06/12/15 16:24	
Diisopropyl ether	ug/L	ND	5.0	06/12/15 16:24	
Ethanol	ug/L	ND	200	06/12/15 16:24	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/12/15 16:24	
Ethylbenzene	ug/L	ND	5.0	06/12/15 16:24	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/12/15 16:24	
Naphthalene	ug/L	ND	5.0	06/12/15 16:24	
tert-Amyl Alcohol	ug/L	ND	100	06/12/15 16:24	
tert-Amylmethyl ether	ug/L	ND	10.0	06/12/15 16:24	
tert-Butyl Alcohol	ug/L	ND	100	06/12/15 16:24	
tert-Butyl Formate	ug/L	ND	50.0	06/12/15 16:24	
Toluene	ug/L	ND	5.0	06/12/15 16:24	
Xylene (Total)	ug/L	ND	10.0	06/12/15 16:24	
1,2-Dichloroethane-d4 (S)	%	103	70-130	06/12/15 16:24	
4-Bromofluorobenzene (S)	%	106	70-130	06/12/15 16:24	
Toluene-d8 (S)	%	102	70-130	06/12/15 16:24	

LABORATORY CONTROL SAMPLE: 1482819

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	42.8	86	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	936	94	70-130	
Benzene	ug/L	50	49.9	100	70-130	
Diisopropyl ether	ug/L	50	52.7	105	70-130	
Ethanol	ug/L	2000	1910	95	70-130	
Ethyl-tert-butyl ether	ug/L	100	115	115	70-130	
Ethylbenzene	ug/L	50	48.1	96	70-130	
Methyl-tert-butyl ether	ug/L	50	50.9	102	70-130	
Naphthalene	ug/L	50	51.4	103	70-130	
tert-Amyl Alcohol	ug/L	1000	910	91	70-130	
tert-Amylmethyl ether	ug/L	100	102	102	70-130	
tert-Butyl Alcohol	ug/L	500	509	102	70-130	
tert-Butyl Formate	ug/L	400	429	107	70-130	
Toluene	ug/L	50	47.5	95	70-130	
Xylene (Total)	ug/L	150	148	98	70-130	
1,2-Dichloroethane-d4 (S)	%			88	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			97	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: MSV/32113 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253875006

METHOD BLANK: 1483820 Matrix: Water
Associated Lab Samples: 92253875006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/13/15 02:01	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/13/15 02:01	
Benzene	ug/L	ND	5.0	06/13/15 02:01	
Diisopropyl ether	ug/L	ND	5.0	06/13/15 02:01	
Ethanol	ug/L	ND	200	06/13/15 02:01	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/13/15 02:01	
Ethylbenzene	ug/L	ND	5.0	06/13/15 02:01	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/13/15 02:01	
Naphthalene	ug/L	ND	5.0	06/13/15 02:01	
tert-Amyl Alcohol	ug/L	ND	100	06/13/15 02:01	
tert-Amylmethyl ether	ug/L	ND	10.0	06/13/15 02:01	
tert-Butyl Alcohol	ug/L	ND	100	06/13/15 02:01	
tert-Butyl Formate	ug/L	ND	50.0	06/13/15 02:01	
Toluene	ug/L	ND	5.0	06/13/15 02:01	
Xylene (Total)	ug/L	ND	10.0	06/13/15 02:01	
1,2-Dichloroethane-d4 (S)	%	107	70-130	06/13/15 02:01	
4-Bromofluorobenzene (S)	%	109	70-130	06/13/15 02:01	
Toluene-d8 (S)	%	102	70-130	06/13/15 02:01	

LABORATORY CONTROL SAMPLE: 1483821

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	50.0	100	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1010	101	70-130	
Benzene	ug/L	50	54.2	108	70-130	
Diisopropyl ether	ug/L	50	56.6	113	70-130	
Ethanol	ug/L	2000	2330	116	70-130	
Ethyl-tert-butyl ether	ug/L	100	126	126	70-130	
Ethylbenzene	ug/L	50	52.9	106	70-130	
Methyl-tert-butyl ether	ug/L	50	56.2	112	70-130	
Naphthalene	ug/L	50	54.3	109	70-130	
tert-Amyl Alcohol	ug/L	1000	1010	101	70-130	
tert-Amylmethyl ether	ug/L	100	112	112	70-130	
tert-Butyl Alcohol	ug/L	500	575	115	70-130	
tert-Butyl Formate	ug/L	400	480	120	70-130	
Toluene	ug/L	50	50.7	101	70-130	
Xylene (Total)	ug/L	150	162	108	70-130	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			97	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

MATRIX SPIKE SAMPLE: 1483822

Parameter	Units	92253818004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	ND	20	19.2	96	70-130	
3,3-Dimethyl-1-Butanol	ug/L	ND	400	402	100	70-130	
Benzene	ug/L	ND	20	22.0	110	70-130	
Diisopropyl ether	ug/L	ND	20	20.1	100	70-130	
Ethanol	ug/L	ND	800	793	99	70-130	
Ethyl-tert-butyl ether	ug/L	ND	40	44.1	110	70-130	
Ethylbenzene	ug/L	ND	20	20.8	104	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	20.9	105	70-130	
Naphthalene	ug/L	ND	20	22.9	114	70-130	
tert-Amyl Alcohol	ug/L	ND	400	381	95	70-130	
tert-Amylmethyl ether	ug/L	ND	40	38.6	96	70-130	
tert-Butyl Alcohol	ug/L	ND	200	201	101	70-130	
tert-Butyl Formate	ug/L	ND	160	157	98	70-130	
Toluene	ug/L	ND	20	20.2	100	70-130	
1,2-Dichloroethane-d4 (S)	%				99	70-130	
4-Bromofluorobenzene (S)	%				103	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 1483823

Parameter	Units	92253818005 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dichloroethane	ug/L	ND	ND		30	
3,3-Dimethyl-1-Butanol	ug/L	ND	ND		30	
Benzene	ug/L	ND	ND		30	
Diisopropyl ether	ug/L	ND	ND		30	
Ethanol	ug/L	ND	ND		30	
Ethyl-tert-butyl ether	ug/L	ND	ND		30	
Ethylbenzene	ug/L	ND	ND		30	
Methyl-tert-butyl ether	ug/L	ND	ND		30	
Naphthalene	ug/L	ND	ND		30	
tert-Amyl Alcohol	ug/L	ND	ND		30	
tert-Amylmethyl ether	ug/L	ND	ND		30	
tert-Butyl Alcohol	ug/L	ND	ND		30	
tert-Butyl Formate	ug/L	ND	ND		30	
Toluene	ug/L	ND	ND		30	
Xylene (Total)	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	114	113	1		
4-Bromofluorobenzene (S)	%	113	114	1		
Toluene-d8 (S)	%	104	103	1		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: MSV/32156 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92253875013, 92253875014, 92253875015, 92253875019

METHOD BLANK: 1485761 Matrix: Water
Associated Lab Samples: 92253875013, 92253875014, 92253875015, 92253875019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	06/16/15 07:28	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	06/16/15 07:28	
Benzene	ug/L	ND	5.0	06/16/15 07:28	
Diisopropyl ether	ug/L	ND	5.0	06/16/15 07:28	
Ethanol	ug/L	ND	200	06/16/15 07:28	
Ethyl-tert-butyl ether	ug/L	ND	10.0	06/16/15 07:28	
Ethylbenzene	ug/L	ND	5.0	06/16/15 07:28	
Methyl-tert-butyl ether	ug/L	ND	5.0	06/16/15 07:28	
Naphthalene	ug/L	ND	5.0	06/16/15 07:28	
tert-Amyl Alcohol	ug/L	ND	100	06/16/15 07:28	
tert-Amylmethyl ether	ug/L	ND	10.0	06/16/15 07:28	
tert-Butyl Alcohol	ug/L	ND	100	06/16/15 07:28	
tert-Butyl Formate	ug/L	ND	50.0	06/16/15 07:28	
Toluene	ug/L	ND	5.0	06/16/15 07:28	
Xylene (Total)	ug/L	ND	10.0	06/16/15 07:28	
1,2-Dichloroethane-d4 (S)	%	89	70-130	06/16/15 07:28	
4-Bromofluorobenzene (S)	%	86	70-130	06/16/15 07:28	
Toluene-d8 (S)	%	95	70-130	06/16/15 07:28	

LABORATORY CONTROL SAMPLE: 1485762

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	42.1	84	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	880	88	70-130	
Benzene	ug/L	50	52.8	106	70-130	
Diisopropyl ether	ug/L	50	48.1	96	70-130	
Ethanol	ug/L	2000	1900	95	70-130	
Ethyl-tert-butyl ether	ug/L	100	104	104	70-130	
Ethylbenzene	ug/L	50	49.5	99	70-130	
Methyl-tert-butyl ether	ug/L	50	47.4	95	70-130	
Naphthalene	ug/L	50	56.5	113	70-130	
tert-Amyl Alcohol	ug/L	1000	806	81	70-130	
tert-Amylmethyl ether	ug/L	100	97.1	97	70-130	
tert-Butyl Alcohol	ug/L	500	374	75	70-130	
tert-Butyl Formate	ug/L	400	344	86	70-130	
Toluene	ug/L	50	49.8	100	70-130	
Xylene (Total)	ug/L	150	149	99	70-130	
1,2-Dichloroethane-d4 (S)	%			94	70-130	
4-Bromofluorobenzene (S)	%			94	70-130	
Toluene-d8 (S)	%			96	70-130	

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: OEXT/35689 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92253875001, 92253875002

METHOD BLANK: 1481887 Matrix: Water
Associated Lab Samples: 92253875001, 92253875002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	06/11/15 17:36	
1-Chloro-2-bromopropane (S)	%	110	60-140	06/11/15 17:36	

LABORATORY CONTROL SAMPLE & LCSD: 1481888 1481889

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.24	0.27	86	96	60-140	13	20	
1-Chloro-2-bromopropane (S)	%				100	103	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1481890 1481891

Parameter	Units	92253690011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.33	0.33	116	118	60-140	2	20	
1-Chloro-2-bromopropane (S)	%						116	119	60-140			

SAMPLE DUPLICATE: 1481892

Parameter	Units	92253690012 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	99	96	2		

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QUALITY CONTROL DATA

Project: Rhodesway North
Pace Project No.: 92253875

QC Batch: OEXT/35690 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92253875003, 92253875004, 92253875005, 92253875006, 92253875007, 92253875008, 92253875009, 92253875010, 92253875011, 92253875012, 92253875013, 92253875014, 92253875015, 92253875016, 92253875017, 92253875018, 92253875019

METHOD BLANK: 1481894 Matrix: Water
Associated Lab Samples: 92253875003, 92253875004, 92253875005, 92253875006, 92253875007, 92253875008, 92253875009, 92253875010, 92253875011, 92253875012, 92253875013, 92253875014, 92253875015, 92253875016, 92253875017, 92253875018, 92253875019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.019	06/12/15 02:48	
1-Chloro-2-bromopropane (S)	%	112	60-140	06/12/15 02:48	

LABORATORY CONTROL SAMPLE & LCSD: 1481895 1481896

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.29	0.29	0.28	102	100	60-140	5	20	
1-Chloro-2-bromopropane (S)	%				105	108	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1481897 1481898

Parameter	Units	92253875006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.27	.27	0.26	0.26	98	98	60-140	0	20	
1-Chloro-2-bromopropane (S)	%						103	103	60-140			

SAMPLE DUPLICATE: 1481899

Parameter	Units	92253875007 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	113	119	3		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: Rhodesway North
Pace Project No.: 92253875

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.

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Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Rhodesway North
Pace Project No.: 92253875

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92253875001	02567-SW1	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253875002	02567-SW2	EPA 8011	OEXT/35689	EPA 8011	GCSV/21627
92253875003	02567-MW2	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875004	02567-MW3	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875005	02567-MW7	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875006	02567-MW8	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875007	02567-MW11	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875008	02567-MW14	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875009	02567-MW15	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875010	02567-MW18	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875011	02567-MW19	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875012	02567-MW20	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875013	02567-RW5	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875014	02567-RW8	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875015	02567-RW10	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875016	02567-TW2	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875017	02567-FB1	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875018	02567-FB2	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875019	02567-Duplicate	EPA 8011	OEXT/35690	EPA 8011	GCSV/21628
92253875001	02567-SW1	EPA 8260	MSV/32097		
92253875002	02567-SW2	EPA 8260	MSV/32098		
92253875003	02567-MW2	EPA 8260	MSV/32098		
92253875004	02567-MW3	EPA 8260	MSV/32098		
92253875005	02567-MW7	EPA 8260	MSV/32098		
92253875006	02567-MW8	EPA 8260	MSV/32113		
92253875007	02567-MW11	EPA 8260	MSV/32105		
92253875008	02567-MW14	EPA 8260	MSV/32098		
92253875009	02567-MW15	EPA 8260	MSV/32098		
92253875010	02567-MW18	EPA 8260	MSV/32097		
92253875011	02567-MW19	EPA 8260	MSV/32097		
92253875012	02567-MW20	EPA 8260	MSV/32105		
92253875013	02567-RW5	EPA 8260	MSV/32156		
92253875014	02567-RW8	EPA 8260	MSV/32156		
92253875015	02567-RW10	EPA 8260	MSV/32156		
92253875016	02567-TW2	EPA 8260	MSV/32105		
92253875017	02567-FB1	EPA 8260	MSV/32097		
92253875018	02567-FB2	EPA 8260	MSV/32097		
92253875019	02567-Duplicate	EPA 8260	MSV/32156		

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Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2*
	Document Number: F-CHR-CS-003-rev.16	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS

* Page 2 of 2 is for Internal Use Only

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1401 Type of Ice: Wet Blue None ☐ Samples on ice, cooling process has begun

Temp Correction Factor T1401 No Correction

Corrected Cooler Temp.: 2.4 °C Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: 6/10 MLP

Temp should be above freezing to 6°C Comments:

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix:_____	☐Yes ☐No ☐N/A	12. #1 bottles say SW2 but time to match COC for #1
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13. *received WSW1- not on COC 6/10/8
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review:	TR	Date:	6/10
SRF Review:	TR	Date:	6/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 92253875

92253875

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 2

1901034

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Noelle France	Attention: Accounting
Address: 13504 S Point Blvd Charlotte, NC	Copy To:	Company Name: ECS
		Address: AGAWAM, MA
Email To: nfrance@ecsconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704 583 2711 Fax:	Project Name: Rhodesway North	Pace Project Manager: Ezell Taylor
Requested Due Date/TAT: Standard	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: 8260 BTEXMN	1,2 DCA	8 Oxygenates	EDB 8011	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	02567 - SW1	WT	G			6/8	1315		6				Y						X	X	X	X		
2	02567 - SW2					6/8	1338																	
3	02567 - MW2					6/9	0920																	
4	02567 - MW3					6/9	1000																	
5	02567 - MW7					6/9	1255																	
6	02567 - MW8					6/9	0940																	
7	02567 - MW11					6/9	1630																	
8	02567 - MW14					6/8	1615																	
9	02567 - MW15					6/8	1630																	
10	02567 - MW18					6/8	1548																	
11	02567 - MW19					6/8	1459																	
12	02567 - MW20					6/9	1600																	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Report J Values	Brian Peay / ECS	6/9/15	2160	Brian Peay / ECS Office	6/9/15	2160				
	ECS Office			D Moody - Pace	06-10-15	07:20				
	D Moody	06-10-15	17:20	[illegible] H&L	6-10-15	17:20	2.8	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brian Peay

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 6/9/15

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 2

1905749

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Noelle France	Attention: Accounting
Address: 13504 S Point Blvd Charlotte, NC	Copy To:	Company Name: ECS
		Address: AGAWAM, MA
Email To: nfrance@ecsconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583-2711 Fax:	Project Name: Rhodesway North	Pace Project Manager: Ezell Taylor
Requested Due Date/TAT: Standard	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☒ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE)
Drinking Water DW
Water WT
Waste Water WW
Product P
Soil/Solid SL
Oil OL
Wipe WP
Air AR
Tissue TS
Other OT

ITEM #	Sample ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	8260 BTEX/MN	1,2 DCA	8 Oxygenates	EDB 8011	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	02567-RW5	WT	G			6/9/15	1125		6				X						X	X	X	X		
2	02567-RW8	"	"			6/9/15	1456		"				"						"	"	"	"		
3	02567-RW10	"	"			6/9/15	1210		"				"						"	"	"	"		
4	02567-TW2	"	"			6/9/15	1410		"				"						"	"	"	"		
5	02567-FB1	"	"			6/8/15	1710		"				"						"	"	"	"		
6	02567-FB2	"	"			6/9/15	1020		"				"						"	"	"	"		
7	02567-DUPLICATE	"	"			6/9/15	1000		"				"						"	"	"	"		
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Report J Values	Brian Peay / ECS	6/9/15	2100	ECS office / ECS	6/9/15	2100				
	ECS Office			D Moody - Pace	~~06-10~~ 06-10-15	07:10				
	M Moody	06-10-15	17:20	[illegible] HUL	6-10	1720	2.8	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brian Peay

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 6/09/2015

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Quality Assurance and Quality Control Evaluation
Pace Analytical Services
Rhodesway North

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Tertiary Amyl Alcohol (µg/L)	Tertiary Butyl Alcohol (µg/L)
02567-FB1	06/08/2015	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<100	<100
02567-FB2	06/09/2015	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<100	<100
Trip Blank	06/09/2015	<5.0	<5.0	<5.0	<10.0	<5.0	<5.0	<100	<100

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Naphthalene (µg/L)	Tertiary Amyl Alcohol (µg/L)	Tertiary Butyl Alcohol (µg/L)
02567-MW20	06/09/2015	<500	<500	<500	<1000	4740	<100	18100	22100
02567-Duplicate	06/09/2015	<250	<250	<250	<500	6460	207 J	17600	30300
Relative Percent Difference		**NA**	**NA**	**NA**	**NA**	**36.29%**	**NA**	**2.76%**	**37.10%**
							Average Percent Difference	**25%**	

Results in micrograms per liter ug/L
Results that are below the method detection limit were assigned a value of 1/2 the method detection limit.
NA not applicable

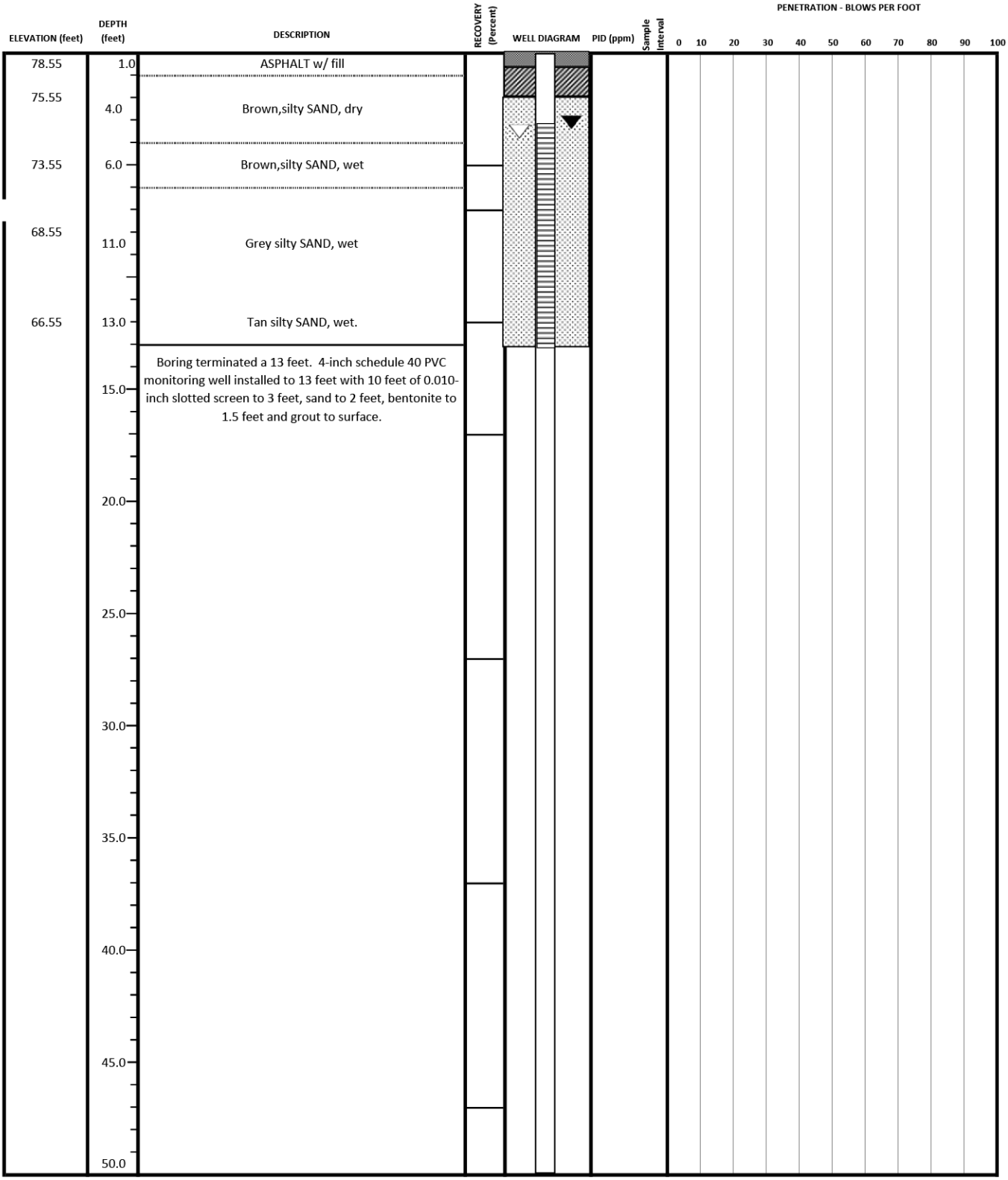
APPENDIX D

Boring Logs

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 79.55 feet
Height of Riser: 79.20 feet



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW4
DATE STARTED: 4/21/2015
DATE COMPLETED: 4/21/2015
PROJECT NUMBER: 14-215778

NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

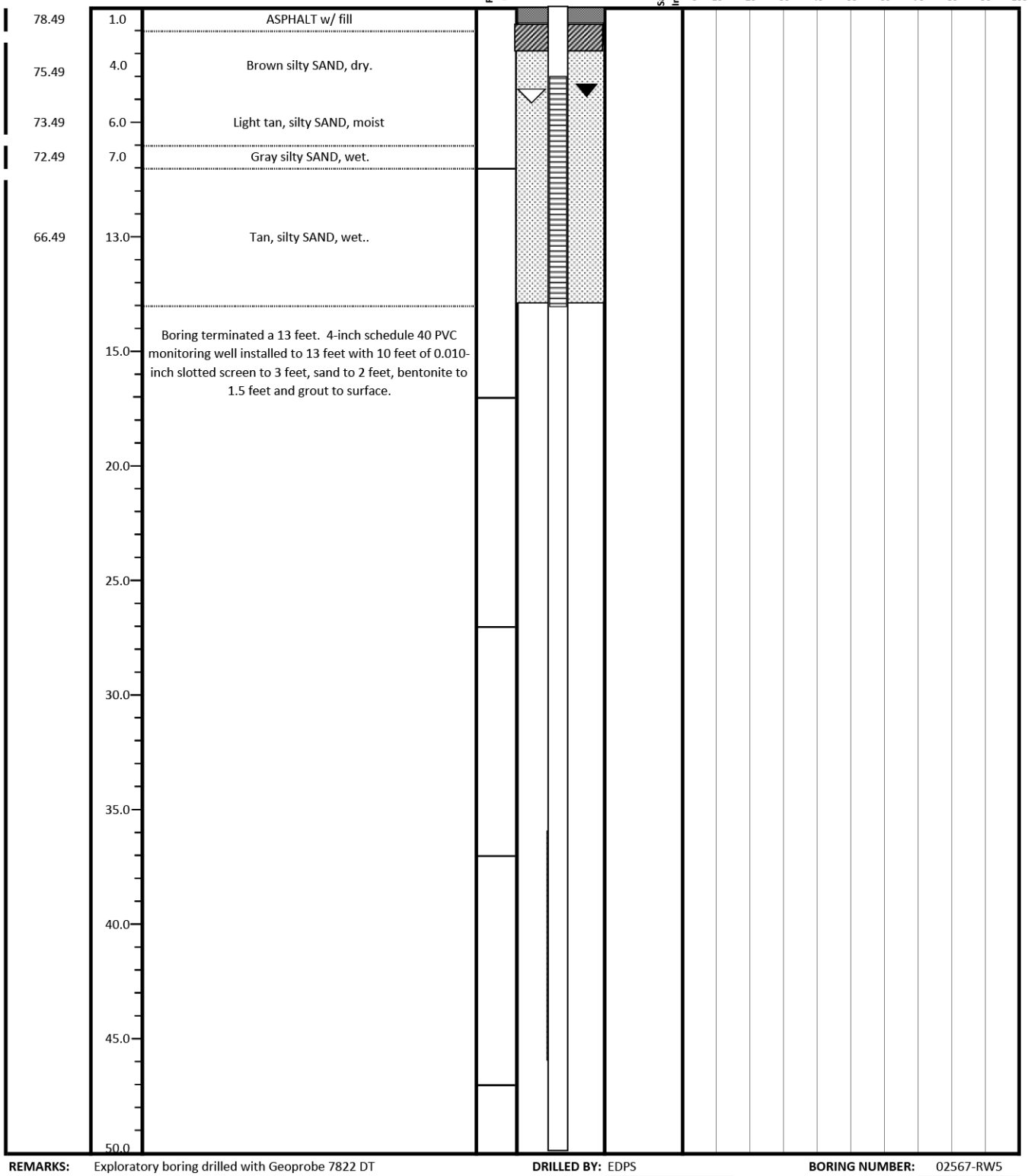
BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 79.49 feet
Height of Riser: 79.08 feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION
78.49	1.0	ASPHALT w/ fill
75.49	4.0	Brown silty SAND, dry.
73.49	6.0	Light tan, silty SAND, moist
72.49	7.0	Gray silty SAND, wet.
66.49	13.0	Tan, silty SAND, wet..
	13.0	Boring terminated a 13 feet. 4-inch schedule 40 PVC monitoring well installed to 13 feet with 10 feet of 0.010-inch slotted screen to 3 feet, sand to 2 feet, bentonite to 1.5 feet and grout to surface.

RECOVERY (Percent) | WELL DIAGRAM | PID (ppm) | Sample Interval | PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW5
DATE STARTED: 4/21/2015
DATE COMPLETED: 4/21/2015
PROJECT NUMBER: 14-215778

NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

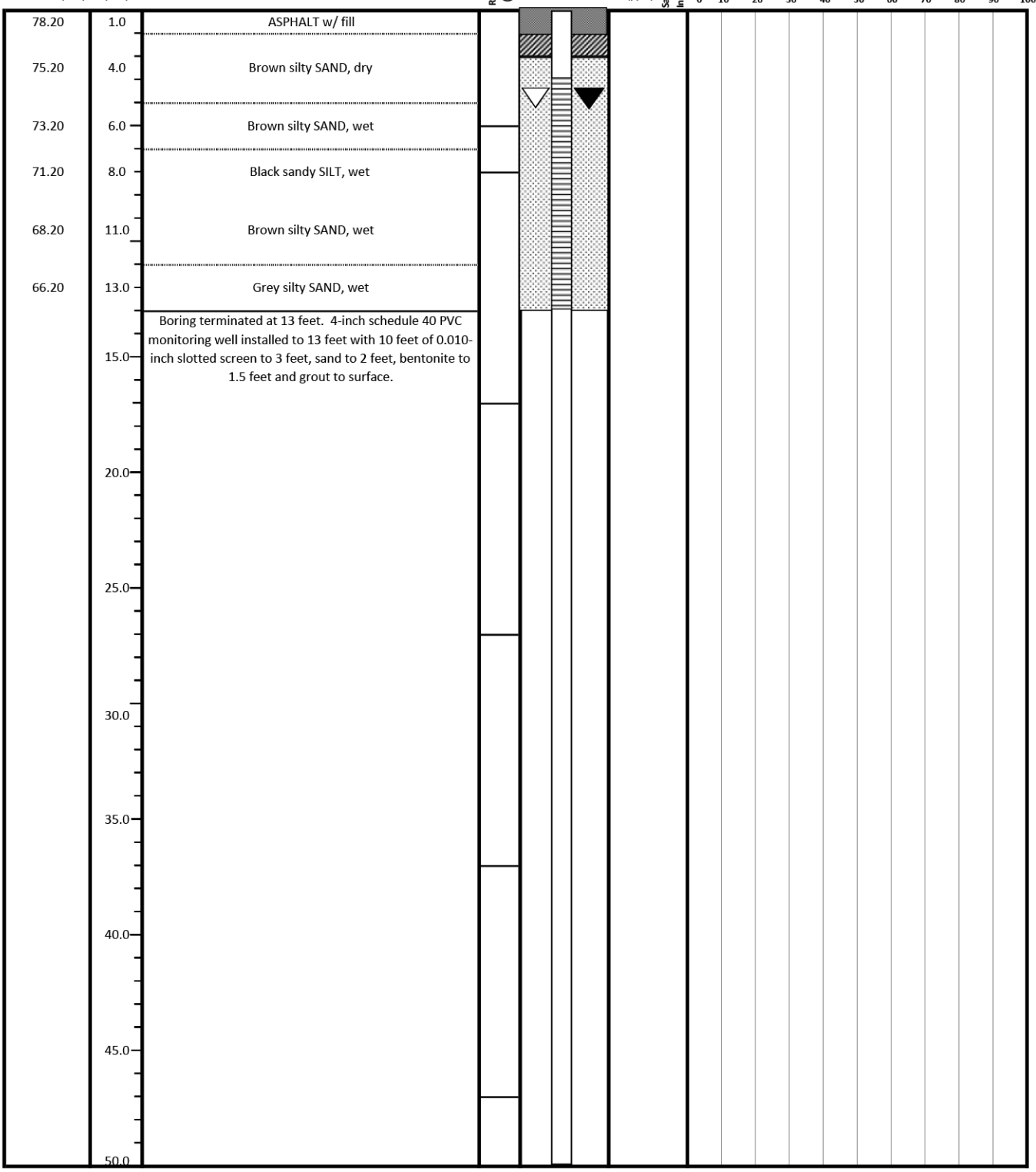
BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 79.20 feet
Height of Riser: 78.71 feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION
78.20	1.0	ASPHALT w/ fill
75.20	4.0	Brown silty SAND, dry
73.20	6.0	Brown silty SAND, wet
71.20	8.0	Black sandy SILT, wet
68.20	11.0	Brown silty SAND, wet
66.20	13.0	Grey silty SAND, wet
		Boring terminated at 13 feet. 4-inch schedule 40 PVC monitoring well installed to 13 feet with 10 feet of 0.010-inch slotted screen to 3 feet, sand to 2 feet, bentonite to 1.5 feet and grout to surface.

RECOVERY (Percent) | WELL DIAGRAM | PID (ppm) | Sample Interval | PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW6
DATE STARTED: 4/21/2015
DATE COMPLETED: 4/21/2015
PROJECT NUMBER: 14-215778

NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 78.56 feet
Height of Riser: 78.21 feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION
77.56	1.0	ASPHALT w/ fill
74.56	4.0	Brown sandy SILT, dry
68.56	10.0	Brown sandy SILT, wet
65.56	13.0	Black silty SAND, wet
	13.0	Boring terminated at 13 feet. 4-inch schedule 40 PVC monitoring well installed to 13 feet with 10 feet of 0.010-inch slotted screen to 3 feet, sand to 2 feet, bentonite to 1.5 feet and grout to surface.
	15.0	
	20.0	
	25.0	
	30.0	
	35.0	
	40.0	
	45.0	
	50.0	

RECOVERY (Percent) | WELL DIAGRAM | PID (ppm) | Sample Interval | PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)

REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW7
DATE STARTED: 4/22/2015
DATE COMPLETED: 4/22/2015
PROJECT NUMBER: 14-215778

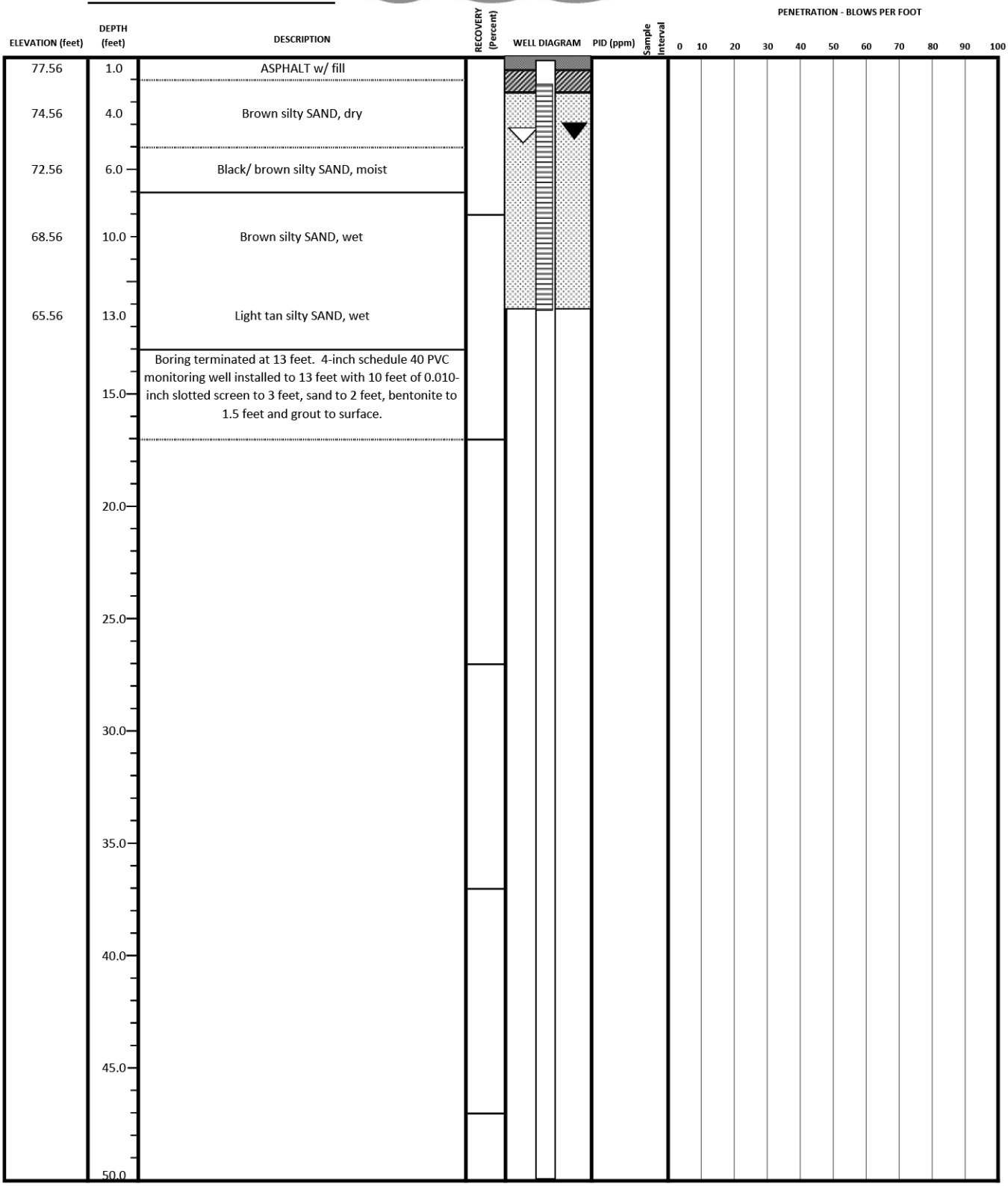
NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 78.56 feet
Height of Riser: 77.91 feet



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P., Pike

BORING NUMBER: 02567-RW7
DATE STARTED: 4/22/2015
DATE COMPLETED: 4/22/2015
PROJECT NUMBER: 14-215778

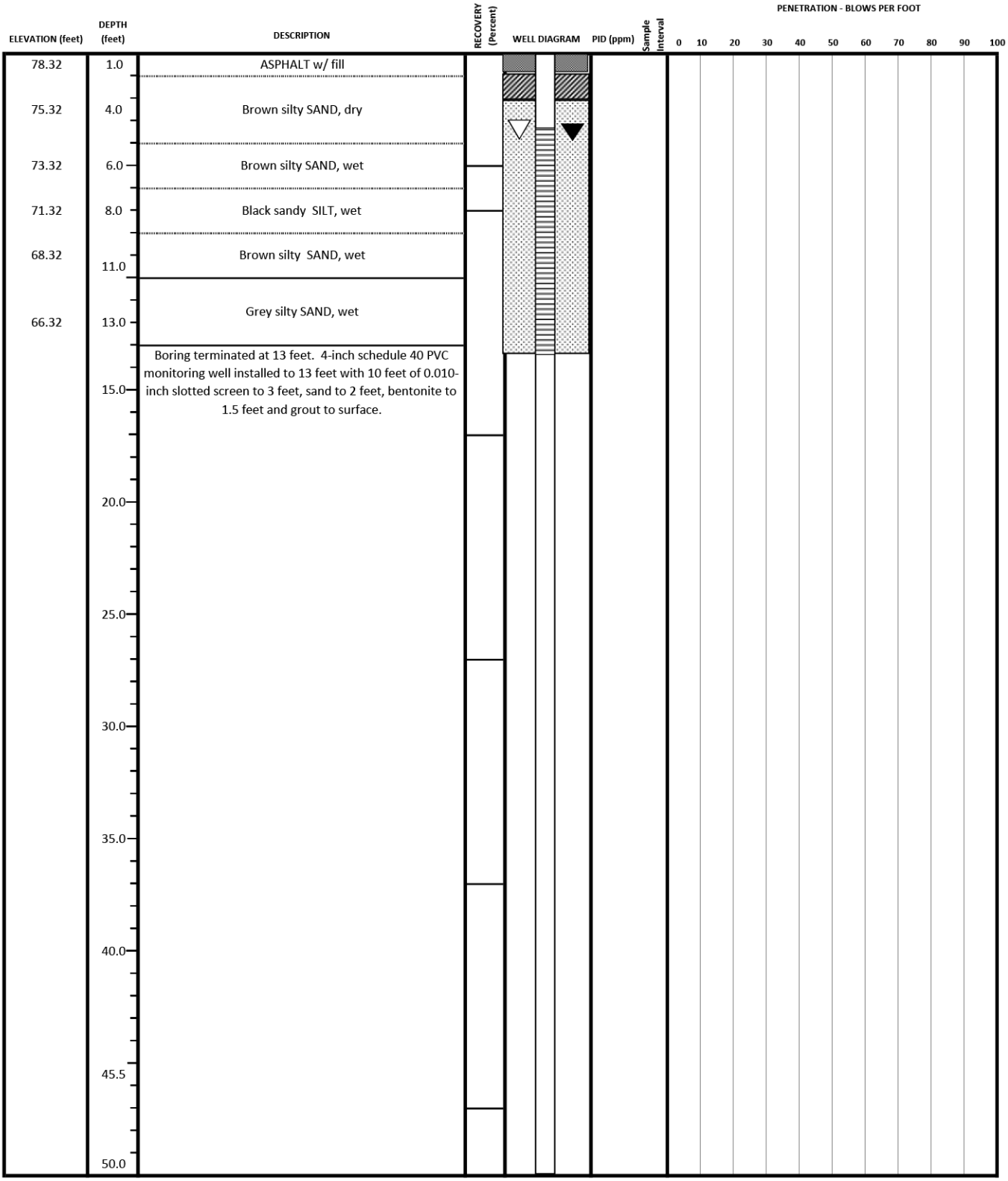
NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 79.32 feet
Height of Riser: 78.84 feet



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW9
DATE STARTED: 4/21/2015
DATE COMPLETED: 4/21/2015
PROJECT NUMBER: 14-215778

NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Drill Cuttings
Standard Penetration Test

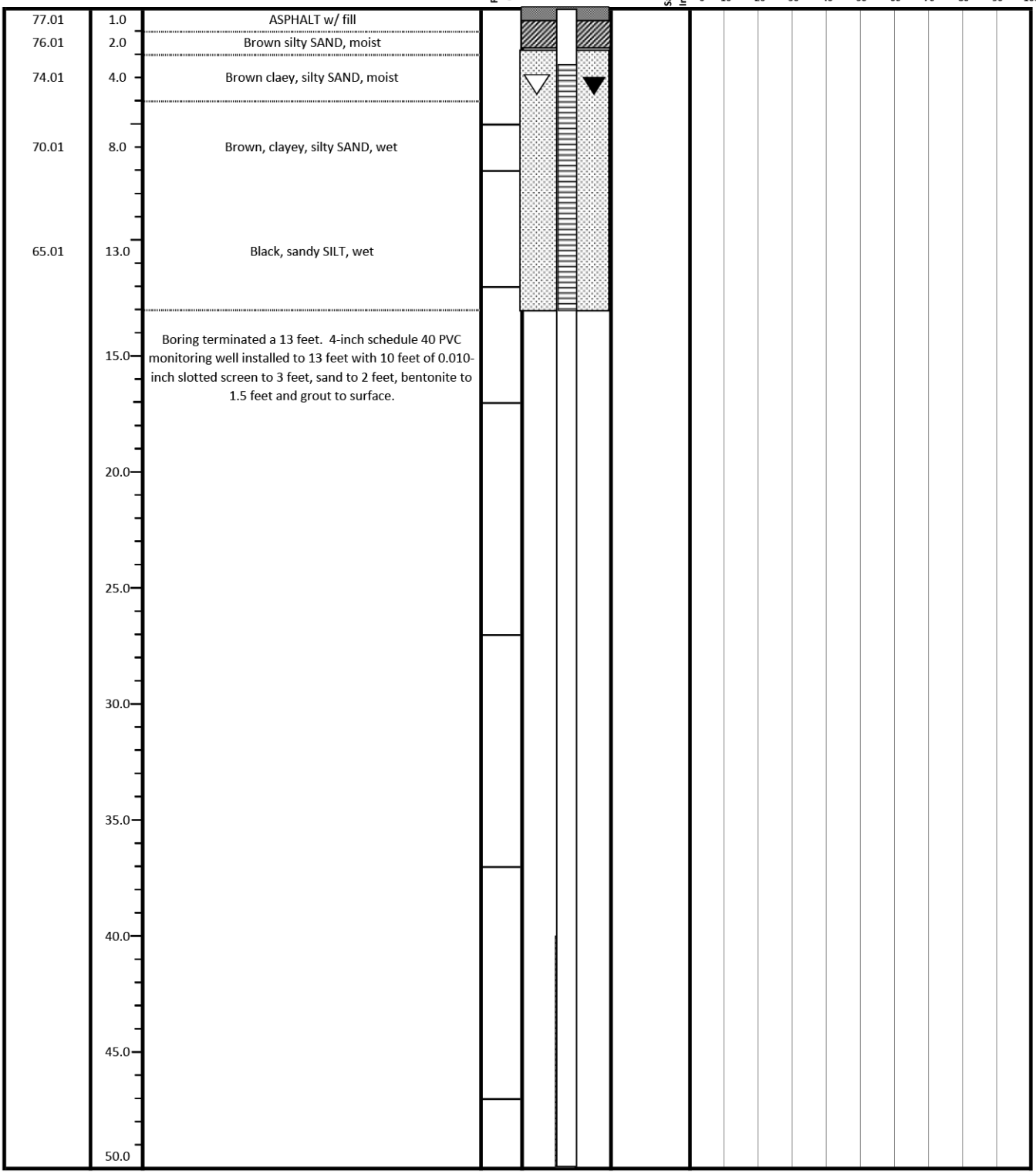
BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy
Walterboro, SC

Datum Elevation: 78.01 feet
Height of Riser: 77.61 feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION
77.01	1.0	ASPHALT w/ fill
76.01	2.0	Brown silty SAND, moist
74.01	4.0	Brown claey, silty SAND, moist
70.01	8.0	Brown, clayey, silty SAND, wet
65.01	13.0	Black, sandy SILT, wet
		Boring terminated a 13 feet. 4-inch schedule 40 PVC monitoring well installed to 13 feet with 10 feet of 0.010-inch slotted screen to 3 feet, sand to 2 feet, bentonite to 1.5 feet and grout to surface.

RECOVERY (Percent) | WELL DIAGRAM | PID (ppm) | Sample Interval | PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)



REMARKS: Exploratory boring drilled with Geoprobe 7822 DT

Well completed with flush-mount manhole and locking expandable plug.

DRILLED BY: EDPS
LOGGED BY: ECS - P. Pike

BORING NUMBER: 02567-RW10
DATE STARTED: 4/21/2015
DATE COMPLETED: 4/21/2015
PROJECT NUMBER: 14-215778

NR = No Recovery

GW level @ time of boring
GW level measured after well installation
Grout
Bentonite
Sand
Riser
Screen
Hand Auger
Standard Penetration Test
Drill Cuttings

APPENDIX E

Well Construction Records

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Highway
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Highway
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-4

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: OMW - 25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) 17538 Greenhill Road, Char, NC 28278
Level: A ☐ B ☑ C ☐ D ☐ (circle one)
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/25/15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-5

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A B C D (circle one) ☐ ☑ ☐ ☐
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo
(last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-6

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A B C D (circle one) ☐ ☑ ☐ ☐
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo
(last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-7

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) Level: A B C D (circle one)
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 4-27-15
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-8

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A B C D (circle one) ☐ ☑ ☐ ☐
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-9

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☑ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/22/15
13 ft. Date Completed: 4/22/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A B C D (circle one) ☐ ☑ ☐ ☐
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo
(last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-10

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☑ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/22/15
13 ft. Date Completed: 4/22/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard CERT. NO.: 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A B C D (circle one) ☐ ☑ ☐ ☐
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

APPENDIX G

Disposal Manifest

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number

2. Page 1 of

3. Emergency Response Phone: 803-957-9175

4. Waste Tracking Number: 05115

GENERATOR

5. Generator's Name and Mailing Address: Rhodes Oil Company, PO Box 1545, Walterboro, SC

Generator's Site Address (if different than mailing address): Rhodesway North, 1400 N. Jeffries Highway, Walterboro, SC

Generator's Phone: Noelle France 704-583-2711

6. Transporter 1 Company Name: A&D Environmental Services (SC) LLC

U.S. EPA ID Number: SCD987598331

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address: A&D Environmental Services, Inc, 2718 Unwanta Road, Archdale, NC 27263

U.S. EPA ID Number: NCD986232221

Facility's Phone: 336-434-7750

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	NON-HAZARDOUS NON-REGULATED MATERIAL Purge Water	2	DM	110	G	
2.	NON-HAZARDOUS NON-REGULATED MATERIAL Soil	10	DM	6,000	P	
3.						
4.						

13. Special Handling Instructions and Additional Information

20150388

105 Gal
3.19 Ton

In Case of Emergency Call: 803-957-9175 A&D (SC) Job #216470 ESCD # 14-215778

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Noelle France

Signature: Noelle France ECS for Rhodes Oil

Month 5 Day 11 Year 15

INTL

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Brian Butterworth

Signature: Brian Butterworth

Month 5 Day 11 Year 15

Transporter 2 Printed/Typed Name

Signature

Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)

U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)

Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Erin McManus

Signature

Month 5 Day 21 Year 15

DESIGNATED FACILITY TO GENERATOR

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No. 001

Page 1 of 1

Zebra Job No. 50767

GENERATOR INFORMATION

Name: RHODES OIL CO. ECS

US EPA ID No.:

Street Address: 1400 Jefferies Hwy Walterboro S.C 29488

Mailing Address:

Phone No.:

Contact: Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		NON-HAZ NON-Rex. liquids (NOS)	N/A	N/A	N/A	1	TT	4849	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Petroleum Contact Ground water from AFVR			
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name: Kerry Wright

Signature: [signature]

Mo. / Day / Yr.: 5/5/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road
High Point, NC 27263

Transporter or EPA ID No.: NCO991302669

Unit No.:

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: Brian Albertson

Shipment Date: 5.5.2015

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature:

Delivery Date:

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road
High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature:

Receipt Date:

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No. 50767

Page 1 of 1

Zebra Job No. 50767

GENERATOR INFORMATION

Name: Rhodes Oil Co-Rhodes North

US EPA ID No.:

Street Address: 1400 Jefferies Hwy, Wetherbo SC

Mailing Address:

Phone No.:

Contact:

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non Haz liquid NOS	/	/	/	TT	TT	5221	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Return contact [illegible]	/		
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name: Brian K. Pray

Signature: [signature]

Mo. / Day / Yr.: 5/5/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669

Unit No.: RT6T3

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: [signature]

Shipment Date: 5/5/14

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature:

Delivery Date:

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature:

Receipt Date:

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357 HIGH POINT, NC 27261

TEL (336) 841-5276 FAX (336) 841-5509

Manifest Document No.

Page 1 of 1

Zebra Job No. 50367

GENERATOR INFORMATION

Name: Rhodes Oil Co. ECS

US EPA ID No.:

Street Address: 1400 Jefferies Hwy Walterboro S.C 29488

Mailing Address:

Phone No.:

Contact: Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non-Haz Non Reg. liquids (NOS)	N/A	N/A	N/A	1	T	5018	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Petroleum Contaminated water from ATTN			
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name: Brian K. Peay

Signature: Brian K Peay

Mo. / Day / Yr.: 5 5 2015

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669

Unit No.: 117 T7

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: Micah Parks 5-5-2015 Shipment Date

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature: Micah Parks 5-5-2015 Delivery Date

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

Manifest Document No.
50767
Page 1 of 1
Zebra Job No. 50767

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

GENERATOR INFORMATION

Name		US EPA ID No.
Rhodes Oil Co - Rhodesway North		
Street Address	**Mailing Address**	**Phone No.**
1400 Jefferies Hwy Lattersboro SC		**Contact** Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non Haz liquid NOS	/	/	/	1	TT	4762	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Pelican contact walm	/		
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
Brian K Peary	[signature]	5/6/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road
High Point, NC 27263

Transporter or EPA ID No.: NCO991302669 — Unit No.: RT 8 T11

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature [signature] — Shipment Date 5/6/15

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature — Delivery Date

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road
High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature — Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No.

Page 1 of 1

Zebra Job No. 50767

GENERATOR INFORMATION

Name: Rhodes Oil Co. ECS

US EPA ID No.

Street Address: 1400 Jefferies Hwy Walterboro S.C 29488

Mailing Address

Phone No.

Contact: Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		NON-HAZ NON-Reg liquids (NOS)	N/A	N/A	N/A	1	TT	4922	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Petroleum Contact Groundwater AFVR			
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name: Brian K. Peay

Signature: [signature]

Mo. / Day / Yr.: 5 6 2015

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road
High Point, NC 27263

Transporter or EPA ID No.: NCO991302669

Unit No.: RT-7T-7

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: Michael Park

Shipment Date: 5-6-2015

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature: Michael Park

Delivery Date: 5-6-2015

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road
High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature

Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra
Environmental & Industrial Services

EMERGENCY PHONE NO.
(336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No. 50767
Page 1 of 1
Zebra Job No. 50767

GENERATOR INFORMATION

Name: Rhodes Oil - Rhodes North	US EPA ID No.
Street Address: 1400 Jeffers Hwy, Wallace SC	Mailing Address
Phone No.	
Contact	

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non Haz Liquid NOS	/	/	/	1	TT	4584	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Return contact note	/		
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
Aaron Williamson ECS Agent For Rhodes Oil Co.	Aaron Williamson	4/6/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669 — Unit No.: RTO 711

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: [signature] — Shipment Date: 4/6/15

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature — Delivery Date

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature — Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

EMERGENCY PHONE NO.
(336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No.	
Page	of
Zebra Job No.	

GENERATOR INFORMATION

Name	US EPA ID No.

Street Address	Mailing Address	Phone No. / Contact
		Phone No.
		Contact

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.								4898	G
b.									
c.									

ADDITIONAL INFORMATION	ERG No.	Zebra Profile Code	Facility Use
a.			
b.			
c.			

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
		5 7 2015

TRANSPORTER INFORMATION

Transporter	*I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.*
Address	Signature Michael Parry — Shipment Date
Transporter or EPA ID No. / Unit No. RT2T10	*I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.*
Phone	Signature — Delivery Date

FACILITY INFORMATION

Facility	*I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.*
Address	Signature — Receipt Date
Facility or EPA ID No.	Discrepancies / Routing Codes / Handing Methods: a.
Phone	b.
Contact	c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276
POST OFFICE BOX 357 HIGH POINT, NC 27261
TEL (336) 841-5276 FAX (336) 841-5509

Manifest Document No. 50762
Page 1 of 1
Zebra Job No. 50762

GENERATOR INFORMATION

Name: Rhodia Oil C - Rhodia Inc
US EPA ID No.:
Street Address: [illegible] Industrial Hwy, Inthestone SC
Mailing Address:
Phone No.:
Contact: Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non Haz Ind NOS	/	/	/	1	TT	1584	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Rhodia Contact ND	/		
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name: Brian K Peay
Signature:
Mo. / Day / Yr.: 5/7/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc
Address: 901 East Springfield Road, High Point, NC 27263
Transporter or EPA ID No.: NCO991302669
Unit No.: 418 TT
Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.
Signature:
Shipment Date: 5/7/15

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.
Signature:
Delivery Date:

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.
Address: 901 East Springfield Road, High Point, NC 27263
Facility or EPA ID No.: NCO991302669
Phone: (336) 841-5276
Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.
Signature:
Receipt Date:

Discrepancies / Routing Codes / Handing Methods
a.
b.
c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

EMERGENCY PHONE NO.
(336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No.	
Page	of
Zebra Job No.	

GENERATOR INFORMATION

Name	US EPA ID No.
Rhodes Oil Co. EES	
Street Address / **Mailing Address**	**Phone No.**
1400 Jefferies Hwy Walterboro S.C 29488	**Contact** Aaron

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non-Haz Non-Reg liquids (Trans)	N/A	N/A	N/A	1	TT	4743	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Petroleum Contact Water from AFVR			
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
Aaron Williamson EES Asset Rep. Rhodes Oil Co.	Aaron Williamson	5 7 2015

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669 Unit No.: DT-7 T-10

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: Michael Park Shipment Date: 5-7-2015

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature: Michael Park Delivery Date: 5-7-2015

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357
HIGH POINT, NC 27261

TEL (336) 841-5276
FAX (336) 841-5509

Manifest Document No. 50767

Page 11 of

Zebra Job No. 50767

GENERATOR INFORMATION

Name: Rhodes Oil Co - Rhodes North	US EPA ID No.
Street Address: 1400 Jefferson Hwy, Lattesboro SC	Mailing Address
Phone No.	Contact: Brian

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		1100 Haz liquid NOS	/	/	/	1	11	5112	G
b.									
c.									

ADDITIONAL INFORMATION		ERG No.	Zebra Profile Code	Facility Use
a.	Delivery contact [illegible]			
b.				
c.				

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
Brian K Peay	[signature]	5/8/15

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669 — Unit No.: RT 8 771

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature [signature] — Shipment Date 5/8/15

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature — Delivery Date

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature — Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

MATERIAL MANIFEST

Zebra Environmental & Industrial Services

EMERGENCY PHONE NO. (336) 841-5276

POST OFFICE BOX 357 HIGH POINT, NC 27261

TEL (336) 841-5276 FAX (336) 841-5509

Manifest Document No.

Page 1 of 1

Zebra Job No. 50767

GENERATOR INFORMATION

Name	US EPA ID No.
Rhodes Oil Co. Etc.	

Street Address	Mailing Address	Phone No.
1400 Jefferies Hwy Walterboro S.C. 29488		Contact: Brent Rhodes

DESCRIPTION OF MATERIALS

	HM	USDOT Proper Shipping Name (Complete All Items for Hazardous Materials)	Hazard Class or Div	UN / NA ID No.	Packing Group	Containers Qty.	Containers Type	Total Quantity	Unit Wt./Vol.
a.		Non-Haz Non Reg. liquids (Mos)	N/A	N/A	N/A	1	TT	23" 2994	G
b.									
c.									

ADDITIONAL INFORMATION	ERG No.	Zebra Profile Code	Facility Use
a. Petroleum Contaminated water from AFVR			
b.			
c.			

GENERATOR'S CERTIFICATION

This is to certify that the above-described materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. I further certify that none of the materials described above are a hazardous waste as defined by EPA 40 CFR Part 261 or any applicable state law, and unless specifically identified above, the materials contain less than 1,000 ppm total halogens and do not contain quantifiable levels (2 ppm) of PCBs as defined by EPA 40 CFR Parts 279 and 761.

Printed / Typed Name	Signature	Mo. / Day / Yr.
Brent K Rhodes		5 8 2015

TRANSPORTER INFORMATION

Transporter: Zebra Environmental & Industrial Services Inc

Address: 901 East Springfield Road, High Point, NC 27263

Transporter or EPA ID No.: NCO991302669 Unit No.: HT-7 T-5

Phone: (336) 841-5276

I hereby acknowledge receipt of the above-described materials for transport from the generator site listed above.

Signature: Michael Park 5.8.2015 Shipment Date

I hereby acknowledge receipt of the above-described materials were received from the generator site and were transported to the facility listed below.

Signature: Michael Park 5.9.2015 Delivery Date

FACILITY INFORMATION

Facility: Zebra Environmental & Industrial Services, Inc.

Address: 901 East Springfield Road, High Point, NC 27263

Facility or EPA ID No.: NCO991302669

Phone: (336) 841-5276

Contact: David Tedder

I hereby acknowledge receipt of the materials covered by this manifest except for any discrepancy noted below.

Signature Receipt Date

Discrepancies / Routing Codes / Handing Methods

a.

b.

c.

ORIGINAL - Facility Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

APPENDIX K

Data Verification Checklist

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	✓		
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?			✓
10	Has current use of the site and adjacent land been described?			✓
11	Has the site-specific geology and hydrogeology been described?			✓
12	Has the primary soil type been described?			✓
13	Have field screening results been described?			✓
14	Has a description of the soil sample collection and preservation been detailed?			✓
15	Has the field screening methodology and procedure been detailed?			✓
16	Has the monitoring well installation and development dates been provided?			✓
17	Has the method of well development been detailed?			✓
18	Has justification been provided for the locations of the monitoring wells?	✓		
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?	✓		
25	Does the report include a brief discussion of the assessment done and the results?	✓		
26	Does the report include a brief discussion of the aquifer evaluation and results?			✓
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)			✓
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)			✓
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?			✓
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)			✓
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)			✓
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)			✓
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)			✓
47	Have the soil boring/field screening logs been provided? (Appendix D)			✓
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	✓		
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)			✓
50	Have the disposal manifests been provided? (Appendix G)	✓		
51	Has a copy of the local zoning regulations been provided? (Appendix H)			✓
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			✓
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

Project Verifier (signature) _____

(print name) David R. Mazorra, PE

Date 6/26/15

APPENDIX L

Aggressive Fluid Vapor Recovery Event Data

Including: Before and After Data; Field Data Sheets; Air Flow Calculations; Pre-Treatment Emissions Calculations; Post-Treatment Emissions Calculations

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
BEFORE AND AFTER DATA

Project Name:	Rhodesway North	UST Permit No:	02567
Project No:	14-215778	ECS Field Rep. 1:	B. Peay
Start Date:	5/4/2015	ECS Field Rep. 2:	A. Williamson
End Date:	5/8/2015		

AFVR Measurements Prior to and After Event

Measurements Prior to AFVR Event

Blower Model	Dekker Vmax 3030	
Water Tank Storage Capacity:	9,600	gallons
Inside Diameter of Blower Outlet Stack	4	inches
Is Tank Empty & Clean (Y/N)	Y	

Measurements Before AFVR Event	**5/4/2015**	
Tanker Product volume	0	gallons
Tanker Water volume	0	gallons
Measurements After AFVR Event	**5/8/2015**	
Tanker Product volume	NM	gallons
Tanker Water volume	51,692	gallons

	Prior to AFVR -		Immediately Post AFVR		20-min Post AFVR	
Well ID	**Depth to Product**	**Depth to Water**	**Depth to Product**	**Depth to Water**	**Depth to Product**	**Depth to Water**
02567-MW17	3.60	6.26	NP	6.55	NP	5.93
02567-MW12	3.58	7.65	NP	6.46	NP	6.02
02567-RW2	4.07	4.71	NP	6.9	NP	5.65
02567-MW10	4.25	4.91	6.00	6.7	5.60	6.50
02567-MW20	4.15	4.48	NP	6.48	NP	6.18
02567-MW7	NP	4.15	NP	5.78	NP	5.86

NP denotes no measurable free product.
NM denotes not measured.

Project: Rhodesway North
Project: 14-215778
Date: 5/4/2015-5/8/15

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
AFVR EVENT FIELD DATA SHEETS

UST Permit No: 02657
ECS Field Rep. 1: B. Peay
ECS Field Rep. 2: A. Williamson

Measurements During 96-hr AFVR Event

Elapsed Time (Hours)	Reading Interval (Min)	Date & Time	Stack Outlet					Blower	AFVR Wells						Non-AFVR Wells					
			Air Flow (fpm)	Temperature (°F)	R.H. (%)	TLV (ppm)		Vacuum (in.Hg)	02567-MW17		02567-MW12		02567-RW2		02567-MW10		02567-MW20		02567-MW7	
						Pre-Treatment	Post-Treatment		Vacuum (in.Hg)	Stinger Depth (ft.)	Vacuum (in.Hg)	Stinger Depth (ft.)	Vacuum (in.Hg)	Stinger Depth (ft.)	DTW (ft)	Vacuum (in.wc)	DTW (ft)	Vacuum (in.wc)	DTW (ft)	Vacuum (in.wc)
		2/2/15 13:00	← Start time							3.60		3.58		4.07						
1 hr	30	2/2/15 13:30	515	110.3	87.3	100,000	110.0	26.0	15.0	3.60	15.0	3.58	5.0	4.07	---	0.00	---	0.50	---	2.00
	30	2/2/15 14:00	505	108.7	60.4	100,000	71.0	25.5	15.5	3.60	14.5	3.58	4.5	4.07	---	0.00	---	0.50	---	2.00
2 hr	30	2/2/15 14:30	408	115.3	47.8	100,000	60.0	25.0	15.0	3.60	14.5	3.58	4.5	4.07	---	0.00	---	0.50	---	2.00
	30	2/2/15 15:00	439	116.9	49.2	100,000	45.0	25.0	16.5	3.60	14.0	3.58	4.0	4.07	---	0.00	---	0.50	---	2.00
3 hr	30	2/2/15 15:30	408	120.3	51.0	100,000	15.0	25.0	17.0	3.60	14.0	3.58	4.0	4.07	---	0.00	---	0.50	---	2.00
	30	2/2/15 16:00	459	121.8	46.3	100,000	21.0	24.0	17.5	3.60	13.0	3.58	4.0	4.07	---	0.00	---	0.50	---	2.10
4 hr	30	2/2/15 16:30	354	94.5	98.3	100,000	55.0	24.0	19.0	3.60	12.0	3.58	11.0	4.07	---	0.00	---	0.20	---	3.00
	30	2/2/15 17:00	413	117.5	98.0	100,000	62.0	25.0	19.0	3.60	16.0	3.58	11.0	4.07	---	0.00	---	0.20	---	3.20
5 hr	30	2/2/15 17:30	509	116.4	52.0	100,000	180.0	25.0	19.0	3.60	16.0	3.58	11.0	4.07	---	0.00	---	0.20	---	3.40
	30	2/2/15 18:00	467	117.5	50.4	100,000	120.0	25.0	20.0	3.60	13.0	3.58	10.0	4.07	---	0.00	---	0.10	---	3.20
6 hr	30	2/2/15 18:30	431	115.2	53.1	96,000	430.0	25.0	19.0	3.60	12.0	4.60	10.0	4.60	---	0.00	---	0.10	---	3.20
	30	2/2/15 19:00	625	112.3	56.1	90,000	380.0	25.0	19.0	4.00	12.0	4.60	11.0	4.60	---	0.00	---	0.00	---	3.30
7 hr	30	2/2/15 19:30	610	111.6	55.5	94,000	240.0	25.0	19.0	4.00	11.0	4.60	10.0	4.60	---	0.00	---	0.10	---	3.60
	30	2/2/15 20:00	458	109.4	58.1	90,000	240.0	25.0	19.0	4.00	12.5	4.60	10.0	4.60	---	0.00	---	0.10	---	3.60
8 hr	30	2/2/15 20:30	438	102.2	53.7	98,000	260.0	26.0	20.0	4.00	13.0	4.60	11.0	4.60	---	0.00	---	0.35	---	4.10
	30	2/2/15 21:00	359	99.3	57.6	94,000	160.0	26.0	19.5	4.00	14.0	4.60	12.0	4.60	---	0.00	---	0.30	---	4.50
9 hr	60	2/2/15 22:00	414	94.1	64.3	92,000	200.0	26.0	20.0	4.00	13.0	4.60	12.0	4.60	---	0.00	---	0.20	---	4.70
10 hr	60	2/2/15 23:00	440	91.6	70.2	90,000	200.0	26.0	20.0	4.00	15.0	4.60	11.0	4.60	---	0.00	---	0.00	---	5.00
11 hr	60	2/3/15 0:00	455	89.8	72.5	90,000	160.0	26.0	20.0	4.00	15.0	4.60	12.0	4.60	---	0.00	---	0.00	---	5.00
12 hr	60	2/3/15 1:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
13 hr	60	2/3/15 2:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
14 hr	60	2/3/15 3:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
15 hr	60	2/3/15 4:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
16 hr	60	2/3/15 5:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
17 hr	60	2/3/15 6:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
18 hr	60	2/3/15 7:00	437	90.8	86.1	69,000	91.0	25.8	19.8	4.00	15.0	4.60	10.8	4.60	---	0.00	---	0.00	---	2.50
19 hr	60	2/3/15 8:00	418	91.8	99.7	48,000	22.0	25.5	19.5	4.00	15.0	4.60	9.5	4.60	---	0.00	---	0.00	---	0.00
20 hr	60	2/3/15 9:00	439	92.5	99.3	42,000	35.0	22.5	19.5	3.60	15.0	3.58	9.5	4.07	---	0.00	---	0.00	---	0.00
21 hr	60	2/3/15 10:00	408	109.2	57.1	50,000	25.0	22.0	19.5	4.60	15.0	4.58	9.5	5.07	---	0.00	---	0.40	---	1.10
22 hr	60	2/3/15 11:00	515	117.9	43.9	50,000	19.0	21.0	19.5	4.60	15.0	4.58	9.5	5.07	---	0.00	---	0.00	---	0.00
23 hr	60	2/3/15 12:00	364	125.1	36.9	50,000	28.0	22.0	19.0	5.60	14.5	5.58	9.0	6.00	---	0.00	---	0.00	---	0.00
24 hr	60	2/3/15 13:00	286	130.8	34.1	48,000	22.0	22.0	18.0	5.60	13.5	5.58	9.5	6.00	---	0.00	---	0.00	---	0.30
26 hr	120	2/3/15 15:00	369	130.8	38.1	38,000	33.0	26.0	18.0	6.00	1.5	6.00	9.5	6.00	---	0.00	---	0.00	---	0.00
28 hr	120	2/3/15 17:00	460	128.5	48.9	37,000	58.0	25.5	19.0	4.60	15.0	4.58	13.0	4.07	---	0.00	---	0.00	---	0.00
30 hr	120	2/3/15 19:00	310	115.7	67.3	35,000	34.0	26.0	19.0	4.60	13.0	4.58	12.0	4.07	---	0.00	---	0.00	---	0.00
32 hr	120	2/3/15 21:00	417	104.0	67.0	39,000	16.0	26.0	19.0	4.60	13.0	4.58	11.0	4.07	---	0.00	---	0.00	---	0.00
34 hr	120	2/3/15 23:00	491	106.3	96.5	26,000	40.0	24.5	18.0	4.60	16.0	4.58	10.0	4.07	---	0.00	---	0.00	---	0.00
36 hr	120	2/4/15 1:00	434	100.0	98.2	24,000	29.5	25.0	18.0	4.60	15.5	4.58	9.8	4.07	---	0.00	---	0.00	---	0.00

Project: Rhodesway North
Project: 14-215778
Date: 5/4/2015-5/8/15

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
AFVR EVENT FIELD DATA SHEETS

UST Permit No: 02657
ECS Field Rep. 1: B. Peay
ECS Field Rep. 2: A. Williamson

Measurements During 96-hr AFVR Event

Elapsed Time (Hours)	Reading Interval (Min)	Date & Time	Stack Outlet					Blower	AFVR Wells						Non-AFVR Wells					
			Air Flow (fpm)	Temperature (°F)	R.H. (%)	TLV (ppm)		Vacuum (in.Hg)	02567-MW17		02567-MW12		02567-RW2		02567-MW10		02567-MW20		02567-MW7	
						Pre-Treatment	Post-Treatment		Vacuum (in.Hg)	Stinger Depth (ft.)	Vacuum (in.Hg)	Stinger Depth (ft.)	Vacuum (in.Hg)	Stinger Depth (ft.)	DTW (ft)	Vacuum (in.wc)	DTW (ft)	Vacuum (in.wc)	DTW (ft)	Vacuum (in.wc)
		2/2/15 13:00	← Start time							3.60		3.58		4.07						
38 hr	120	2/4/15 3:00	434	100.0	98.2	24,000	29.5	25.0	18.0	4.60	15.5	4.58	9.8	4.07	---	0.00	---	0.00	---	0.00
40 hr	120	2/4/15 5:00	434	100.0	98.2	24,000	29.5	25.0	18.0	4.60	15.5	4.58	9.8	4.07	---	0.00	---	0.00	---	0.00
42 hr	120	2/4/15 7:00	377	93.7	99.9	22,000	19.0	25.5	18.0	4.60	15.0	4.58	9.5	4.07	---	0.00	---	0.00	---	0.00
44 hr	120	2/4/15 9:00	381	107.4	97.6	24,000	24.0	26.0	18.0	3.60	14.5	3.58	10.0	5.07	---	0.00	---	0.00	---	0.00
46 hr	120	2/4/15 11:00	377	120.2	45.7	24,000	17.0	26.0	18.0	4.10	12.5	4.08	9.5	5.07	---	0.00	---	0.00	---	0.00
48 hr	120	2/4/15 13:00	255	124.7	48.7	28,000	42.0	26.0	18.0	4.10	12.5	4.08	9.5	5.07	---	0.00	---	0.00	---	0.00
50 hr	120	2/4/15 15:00	312	122.2	48.5	26,000	56.0	26.0	18.0	4.10	13.0	4.08	7.5	5.07	---	0.00	---	0.00	---	0.00
52 hr	120	2/4/15 17:00	444	110.7	52.9	26,000	50.0	26.0	20.5	4.10	16.0	4.08	13.0	5.07	---	0.00	---	0.00	---	0.00
54 hr	120	2/4/15 19:00	298	101.5	99.9	38,000	42.0	27.0	19.0	4.10	14.5	4.08	11.0	5.07	---	0.00	---	0.00	---	0.00
56 hr	120	2/4/15 21:00	304	99.9	99.9	38,000	20.00	27.0	19.0	4.10	16.0	4.08	11.5	5.07	---	0.00	---	0.00	---	0.00
58 hr	120	2/4/15 23:00	290	97.4	99.9	40,000	18.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
60 hr	120	2/5/15 1:00	256	102.4	99.9	41,000	19.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
62 hr	120	2/5/15 3:00	256	102.4	99.9	41,000	19.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
64 hr	120	2/5/15 5:00	256	102.4	99.9	41,000	19.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
66 hr	120	2/5/15 7:00	256	102.4	99.9	41,000	19.00	27.0	18.3	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
68 hr	120	2/5/15 9:00	221	107.4	99.9	42,000	20.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
70 hr	120	2/5/15 11:00	269	106.7	98.7	38,000	16.00	27.0	18.5	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
72 hr	120	2/5/15 13:00	118	99.0	99.9	38,000	34.00	27.0	18.5	5.10	16.0	5.08	11.5	5.07	---	0.00	---	0.00	---	0.00
74 hr	120	2/5/15 15:00	145	100.2	99.9	40,000	20.00	27.0	18.0	5.10	15.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
76 hr	120	2/5/15 17:00	332	92.8	99.9	30,000	30.00	27.0	19.0	5.10	14.5	5.08	12.0	5.07	---	0.00	---	0.00	---	0.00
78 hr	120	2/5/15 19:00	291	98.9	99.9	36,000	22.00	27.0	18.5	5.10	15.0	5.08	11.5	5.07	---	0.00	---	0.00	---	0.00
80 hr	120	2/5/15 21:00	281	101.1	99.9	44,000	20.00	27.0	18.0	5.60	14.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
82 hr	120	2/5/15 23:00	240	101.3	99.9	44,000	18.00	27.0	18.0	5.60	14.5	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
84 hr	120	2/6/15 1:00	263	102.9	99.9	39,000	16.00	27.0	18.5	5.60	15.3	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
86 hr	120	2/6/15 3:00	263	102.9	99.9	39,000	16.00	27.0	18.5	5.60	15.3	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
88 hr	120	2/6/15 5:00	263	102.9	99.9	39,000	16.00	27.0	18.5	5.60	15.3	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
90 hr	120	2/6/15 7:00	263	102.9	99.9	39,000	16.00	27.0	18.5	5.60	15.3	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
92 hr	120	2/6/15 9:00	286	104.4	99.9	34,000	14.00	27.0	19.0	5.60	16.0	5.08	11.0	5.07	---	0.00	---	0.00	---	0.00
94 hr	120	2/6/15 11:00	320	109.2	97.7	32,000	18.00	27.0	18.5	5.10	16.0	5.58	11.0	5.57	---	0.00	---	0.00	---	0.00
96 hr	120	2/6/15 13:00	281	108.9	98.3	36,000	12.00	27.0	19.0	5.10	15.5	5.58	11.5	5.57	---	0.00	---	0.00	---	0.00

NOTES
** = Off-gas treatment system not in operation at this time interval; pre-treatment value applied in post-treatment emission calculation during this time interval.

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
AIR FLOW CALCULATIONS

SITE NAME: Rhodesway North
UST PERMIT NUMBER: 02567
AVERAGE DEPTH TO GROUNDWATER: 5.36
DESCRIBE SOIL IN THE SATURATED ZONE: silty SAND
INDICATE AVERAGE HYDRAULIC CONDUCTIVITY (if known): 5.84 ft/year
IDENTIFY THE WELL AND THE I.D. OF EACH WELL USED FOR AFVR: 02567-MW17,MW12,RW2
PROVIDE BLOWER SPECIFICATIONS OF THE VACUUM PUMP (cfm @ in.Hg): 275cfm @ 25 in Hg

AIR FLOW CALCULATIONS

Date	Time	Vacuum (in.Hg)	Velocity (ft/min)	Pipe ID (in)	Temp (°F)	Relative Humidity	B_{wsw} (Wt/Wt)	B_{ws} (vol/vol)	Q_{std} (DSCFM)
Start	13:00								
02/02/15	13:30	26.00	515	4	110.3	87.3	0.05166873432	0.0765	38
02/02/15	14:00	25.50	505	4	108.7	60.4	0.03319261036	0.0505	39
02/02/15	14:30	25.00	408	4	115.3	47.8	0.03166953410	0.0483	31
02/02/15	15:00	25.00	439	4	118.9	49.2	0.03632510227	0.0550	33
02/02/15	15:30	25.00	408	4	120.3	51.0	0.03932880896	0.0593	30
02/02/15	16:00	24.00	459	4	121.8	46.3	0.03709175075	0.0561	34
02/02/15	16:30	24.00	354	4	94.5	98.3	0.03544527671	0.0537	28
02/02/15	17:00	25.00	413	4	117.5	98.0	0.07350407861	0.1054	29
02/02/15	17:30	25.00	509	4	116.4	52.0	0.03576202528	0.0542	38
02/02/15	18:00	25.00	467	4	117.5	50.4	0.03575008950	0.0542	35
02/02/15	18:30	25.00	431	4	115.2	53.1	0.03527503911	0.0535	33
02/02/15	19:00	25.00	625	4	112.3	56.1	0.03426021956	0.0520	48
02/02/15	19:30	25.00	610	4	111.6	55.5	0.03316445075	0.0505	47
02/02/15	20:00	25.00	458	4	109.4	58.1	0.03255212633	0.0496	35
02/02/15	20:30	26.00	438	4	102.2	53.7	0.02402870533	0.0371	35
02/02/15	21:00	26.00	359	4	99.3	57.6	0.02361000636	0.0364	28
02/02/15	22:00	26.00	414	4	94.1	64.3	0.02244871169	0.0347	33
02/02/15	23:00	26.00	440	4	91.6	70.2	0.02268935366	0.0351	35
02/03/15	0:00	26.00	455	4	89.8	72.5	0.02213080919	0.0342	37
02/03/15	1:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	2:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	3:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	4:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	5:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	6:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	7:00	25.75	437	4	90.8	86.1	0.02733785815	0.0420	35
02/03/15	8:00	25.50	418	4	91.8	99.7	0.03294103646	0.0501	33
02/03/15	9:00	22.50	439	4	92.5	99.3	0.03356251942	0.0510	35
02/03/15	10:00	22.00	408	4	109.2	57.1	0.03176880031	0.0484	31
02/03/15	11:00	21.00	515	4	117.9	43.9	0.03127652397	0.0477	39
02/03/15	12:00	22.00	364	4	125.1	36.9	0.03211587900	0.0489	27
02/03/15	13:00	22.00	286	4	130.8	34.1	0.03474315718	0.0527	21
02/03/15	15:00	26.00	369	4	130.8	38.1	0.03474315718	0.0527	27
02/03/15	17:00	25.50	460	4	128.5	48.9	0.04777832453	0.0711	33
02/03/15	19:00	26.00	310	4	115.7	67.3	0.04609145267	0.0688	23
02/03/15	21:00	26.00	417	4	104.0	67.0	0.03201911657	0.0488	32
02/03/15	23:00	24.50	491	4	106.3	96.5	0.05076761374	0.0752	37
02/04/15	1:00	25.00	434	4	100.0	98.2	0.04230041210	0.0635	33
02/04/15	3:00	25.00	434	4	100.0	98.2	0.04230041210	0.0635	33
02/04/15	5:00	25.00	434	4	100.0	98.2	0.04230041210	0.0635	33
02/04/15	7:00	25.50	377	4	93.7	99.9	0.03512733043	0.0533	30
02/04/15	9:00	26.00	381	4	107.4	97.6	0.05322043394	0.0786	29

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
AIR FLOW CALCULATIONS

SITE NAME: Rhodesway North
UST PERMIT NUMBER: 02567
AVERAGE DEPTH TO GROUNDWATER: 5.36
DESCRIBE SOIL IN THE SATURATED ZONE: silty SAND
INDICATE AVERAGE HYDRAULIC CONDUCTIVITY (if known): 5.84 ft/year
IDENTIFY THE WELL AND THE I.D. OF EACH WELL USED FOR AFVR: 02567-MW17,MW12,RW2
PROVIDE BLOWER SPECIFICATIONS OF THE VACUUM PUMP (cfm @ in.Hg): 275cfm @ 25 in Hg

AIR FLOW CALCULATIONS

Date	Time	Vacuum (in.Hg)	Velocity (ft/min)	Pipe ID (in)	Temp (°F)	Relative Humidity	B_{wsw} (Wt/Wt)	B_{ws} (vol/vol)	Q_{std} (DSCFM)
02/04/15	11:00	26.00	377	4	120.2	45.7	0.03490913343	0.0530	28
02/04/15	13:00	26.00	255	4	124.7	48.7	0.04259824358	0.0639	19
02/04/15	15:00	26.00	312	4	122.2	48.5	0.03942407848	0.0594	23
02/04/15	17:00	26.00	444	4	110.7	52.9	0.03068597585	0.0469	34
02/04/15	19:00	27.00	298	4	101.5	99.9	0.04521158475	0.0675	23
02/04/15	21:00	27.00	304	4	99.9	99.9	0.04294494466	0.0644	23
02/04/15	23:00	27.00	290	4	97.4	99.9	0.03961550671	0.0597	23
02/05/15	1:00	27.00	256	4	102.4	99.9	0.04653554940	0.0694	19
02/05/15	3:00	27.00	256	4	102.4	99.9	0.04653554940	0.0694	19
02/05/15	5:00	27.00	256	4	102.4	99.9	0.04653554940	0.0694	19
02/05/15	7:00	27.00	256	4	102.4	99.9	0.04653554940	0.0694	19
02/05/15	9:00	27.00	221	4	107.4	99.9	0.05458466583	0.0804	17
02/05/15	11:00	27.00	269	4	106.7	98.7	0.05268757087	0.0778	20
02/05/15	13:00	27.00	118	4	99.0	99.9	0.04171728362	0.0627	9
02/05/15	15:00	27.00	145	4	100.2	99.9	0.04336163748	0.0650	11
02/05/15	17:00	27.00	332	4	92.8	99.9	0.03410948877	0.0518	26
02/05/15	19:00	27.00	291	4	98.9	99.9	0.04158292554	0.0625	22
02/05/15	21:00	27.00	281	4	101.1	99.9	0.04463461325	0.0667	22
02/05/15	23:00	27.00	240	4	101.3	99.9	0.04492222749	0.0671	18
02/06/15	1:00	27.00	263	4	102.9	99.9	0.04728679353	0.0704	20
02/06/15	3:00	27.00	263	4	102.9	99.9	0.04728679353	0.0704	20
02/06/15	5:00	27.00	263	4	102.9	99.9	0.04728679353	0.0704	20
02/06/15	7:00	27.00	263	4	102.9	99.9	0.04728679353	0.0704	20
02/06/15	9:00	27.00	286	4	104.4	99.9	0.05040794829	0.0747	22
02/06/15	11:00	27.00	320	4	109.2	97.7	0.05640592302	0.0829	24
02/06/15	13:00	27.00	281	4	108.9	98.3	0.05624714785	0.0827	21
Average		**25.69**	**374.08**	**4.00**	**105.64**	**78.74**	**0.0389**	**0.06**	**28.74**

NOTES

Qstd = Flow at Dry Standard Cubic Feet Per Minute (DSCFM)
Vacuum = The level of vacuum being applied recorded from the liquid ring pump inlet in inches of Murcury (in.Hg)
Velocity = The rate at which air flows is measured at the blower discharge piping in feet per minute (fpm)
Pipe ID = The inside diameter of the blower discharge piping (from the vacuum pump) in inches (in)
Temperature = air stream temp exiting the blower discharge piping (dry bulb temp) in degrees Farenheight (°F)
Relative humidity = The % relative humidity of the air stream exiting the blower discharge piping
B_{wsw} = water vapor % by weight, i.e., pounds of water per pound of dry air, derived from the Psychrometric chart (temp Vs relative humidity) based on an elevation of 458 feet above sea level.
B_{ws} = water vapor % by volume

EQUATIONS

$B_{ws} = (B_{wsw}/18 \text{ lb-mole } H_20)/[(1/28.84 \text{ lb-mole dry air}) + (B_{wsw}/18 \text{ lb-mole } H_2O)]$

$Q_{std} = (1\text{-Water Vapor}) * \text{velocity} * (PI * (\text{diameter}/24)^2) * (528°R/(\text{Temp} + 460))$

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
PRE-TREATMENT EMISSION CALCULATIONS

SITE NAME: Rhodesway North AFVR EVENT DATE: 5/4/2015-5/8/15

Elapsed Time (min)	Flow (DSCFM)	$PPM_{measured}$ (ppm)	PPM_{wet} (ppm)	PPM_{dry} (ppm)	RF	PPM_{conc} (ppm)	$C_{c:m}$ (mg/dsm^3)	C_c (lb/dscf)	PMR_c (lb/hr)	PMR_g (lb/hr)	PMR (lb)
0	--	--	--	--	--	--	--	--	--	--	
30	38	100,000	100,000	108,278	1.02	110,444	55,107	0.00344	7.93	9.18	4.59
60	39	100,000	100,000	105,318	1.02	107,425	53,601	0.00335	7.80	9.03	4.51
90	31	100,000	100,000	105,074	1.02	107,176	53,477	0.00334	6.23	7.21	3.60
120	33	100,000	100,000	105,820	1.02	107,936	53,856	0.00336	6.66	7.71	3.85
150	30	100,000	100,000	106,301	1.02	108,427	54,101	0.00338	6.18	7.15	3.57
180	34	100,000	100,000	105,943	1.02	108,062	53,919	0.00337	6.93	8.02	4.01
210	28	100,000	100,000	105,679	1.02	107,793	53,784	0.00336	5.61	6.49	3.24
240	29	100,000	100,000	111,777	1.02	114,013	56,888	0.00355	6.28	7.27	3.64
270	38	100,000	100,000	105,730	1.02	107,844	53,810	0.00336	7.76	8.98	4.49
300	35	100,000	100,000	105,728	1.02	107,843	53,809	0.00336	7.10	8.22	4.11
330	33	96,000	96,000	101,426	1.02	103,454	51,620	0.00322	6.32	7.31	3.66
360	48	90,000	90,000	94,940	1.02	96,839	48,319	0.00302	8.63	9.99	5.00
390	47	94,000	94,000	98,995	1.02	100,975	50,383	0.00315	8.81	10.20	5.10
420	35	90,000	90,000	94,694	1.02	96,588	48,194	0.00301	6.36	7.36	3.68
450	35	98,000	98,000	101,773	1.02	103,808	51,796	0.00323	6.71	7.76	3.88
480	28	94,000	94,000	97,556	1.02	99,507	49,650	0.00310	5.30	6.13	3.07
540	33	92,000	92,000	95,309	1.02	97,215	48,507	0.00303	6.04	6.99	6.99
600	35	90,000	90,000	93,272	1.02	95,137	47,470	0.00296	6.31	7.30	7.30
660	37	90,000	90,000	93,191	1.02	95,055	47,429	0.00296	6.54	7.57	7.57
720	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
780	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
840	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
900	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
960	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
1020	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
1080	35	69,000	69,000	72,022	1.02	73,463	36,655	0.00229	4.80	5.56	5.56
1140	33	48,000	48,000	50,533	1.02	51,544	25,718	0.00161	3.19	3.70	3.70
1200	35	42,000	42,000	44,259	1.02	45,144	22,525	0.00141	2.93	3.39	3.39
1260	31	50,000	50,000	52,545	1.02	53,596	26,742	0.00167	3.15	3.64	3.64
1320	39	50,000	50,000	52,506	1.02	53,556	26,722	0.00167	3.91	4.53	4.53
1380	27	50,000	50,000	52,573	1.02	53,624	26,756	0.00167	2.73	3.16	3.16
1440	21	48,000	48,000	50,672	1.02	51,685	25,789	0.00161	2.04	2.36	2.36
1560	27	38,000	38,000	40,115	1.02	40,918	20,416	0.00127	2.08	2.41	4.83
1680	33	37,000	37,000	39,832	1.02	40,629	20,272	0.00127	2.54	2.94	5.88
1800	23	35,000	35,000	37,585	1.02	38,336	19,128	0.00119	1.66	1.92	3.83
1920	32	39,000	39,000	41,001	1.02	41,821	20,867	0.00130	2.53	2.93	5.86
2040	37	26,000	26,000	28,115	1.02	28,677	14,309	0.00089	1.98	2.29	4.58
2160	33	24,000	24,000	25,627	1.02	26,139	13,042	0.00081	1.63	1.89	3.78
2280	33	24,000	24,000	25,627	1.02	26,139	13,042	0.00081	1.63	1.89	3.78
2400	33	24,000	24,000	25,627	1.02	26,139	13,042	0.00081	1.63	1.89	3.78
2520	30	22,000	22,000	23,238	1.02	23,703	11,827	0.00074	1.32	1.52	3.05
2640	29	24,000	24,000	26,047	1.02	26,567	13,256	0.00083	1.42	1.64	3.28
2760	28	24,000	24,000	25,342	1.02	25,849	12,898	0.00081	1.37	1.59	3.17
2880	19	28,000	28,000	29,911	1.02	30,509	15,223	0.00095	1.07	1.24	2.48
3000	23	26,000	26,000	27,642	1.02	28,195	14,068	0.00088	1.22	1.42	2.83
3120	34	26,000	26,000	27,278	1.02	27,824	13,883	0.00087	1.78	2.06	4.11
3240	23	38,000	38,000	40,753	1.02	41,568	20,741	0.00129	1.77	2.05	4.10

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
PRE-TREATMENT EMISSION CALCULATIONS

SITE NAME: Rhodesway North AFVR EVENT DATE: 5/4/2015-5/8/15

Elapsed Time (min)	Flow (DSCFM)	$PPM_{measured}$ (ppm)	PPM_{wet} (ppm)	PPM_{dry} (ppm)	RF	PPM_{conc} (ppm)	$C_{c:m}$ (mg/dsm^3)	C_c (lb/dscf)	PMR_c (lb/hr)	PMR_g (lb/hr)	PMR (lb)
3360	23	38,000	38,000	40,615	1.02	41,427	20,670	0.00129	1.81	2.10	4.19
3480	23	40,000	40,000	42,539	1.02	43,390	21,650	0.00135	1.83	2.12	4.23
3600	19	41,000	41,000	44,057	1.02	44,938	22,422	0.00140	1.64	1.89	3.79
3720	19	41,000	41,000	44,057	1.02	44,938	22,422	0.00140	1.64	1.89	3.79
3840	19	41,000	41,000	44,057	1.02	44,938	22,422	0.00140	1.64	1.89	3.79
3960	19	41,000	41,000	44,057	1.02	44,938	22,422	0.00140	1.64	1.89	3.79
4080	17	42,000	42,000	45,673	1.02	46,587	23,245	0.00145	1.44	1.66	3.33
4200	20	38,000	38,000	41,208	1.02	42,032	20,972	0.00131	1.58	1.83	3.67
4320	9	38,000	38,000	40,540	1.02	41,351	20,632	0.00129	0.70	0.82	1.63
4440	11	40,000	40,000	42,779	1.02	43,635	21,772	0.00136	0.91	1.05	2.11
4560	26	30,000	30,000	31,640	1.02	32,272	16,103	0.00101	1.58	1.83	3.66
4680	22	36,000	36,000	38,399	1.02	39,166	19,543	0.00122	1.65	1.91	3.81
4800	22	44,000	44,000	47,147	1.02	48,090	23,995	0.00150	1.94	2.24	4.48
4920	18	44,000	44,000	47,167	1.02	48,110	24,005	0.00150	1.65	1.91	3.83
5040	20	39,000	39,000	41,955	1.02	42,794	21,352	0.00133	1.60	1.85	3.71
5160	20	39,000	39,000	41,955	1.02	42,794	21,352	0.00133	1.60	1.85	3.71
5280	20	39,000	39,000	41,955	1.02	42,794	21,352	0.00133	1.60	1.85	3.71
5400	20	39,000	39,000	41,955	1.02	42,794	21,352	0.00133	1.60	1.85	3.71
5520	22	34,000	34,000	36,746	1.02	37,481	18,702	0.00117	1.51	1.75	3.50
5640	24	32,000	32,000	34,892	1.02	35,590	17,758	0.00111	1.58	1.83	3.66
5760	21	36,000	36,000	39,244	1.02	40,029	19,973	0.00125	1.56	1.81	3.62
Average	**29**	**56647**	**56647**	**60006**	**1**	**61206**	**30540**	**0.00191**	**3.52**	**4.07**	**4.13**

Total Pretreatment emissions in pounds: 280.59
Total Pretreatment emissions in gallons: 46.73

NOTES

$PPM_{measured}$ = Actual measurements taken with TLV at the blower discharge piping in Parts Per Million (ppm)

100,000 ppm applied in calculation where TLV measurement was greater than 100,000 ppm (when applicable)

PPM_{wet} = "wet" concentration

PPM_{dry} = "dry" concentration

RF (Response Factor) = Multiplying factor for converting ppm meter readings of hexane-calibrated instruments to ppm concentrations of other gases: 1.02 for benzene; 1.03 for toluene; 1.64 for o-xylene. Multiplying factor obtained from Instruction Manual for TLV Sniffer® by Bacharach, Inc., Instruction 23-9613, rev.2, January 1990.

K = Number of carbons in calibration gas: (Methane K = 1, or Propane K = 3, or Hexane K = 6)

PPM_c= PPM_v, Volumetric concentration of VOC emissions as carbon, dry basis at STP

$C_{c:m}$ = mg/dsm^3, mass concentration of VOC emissions as carbon

M_c = 12.01 mg/mg-mole, molecular weight of carbon

K_3 = 24.07 $dsm^3/10^6$ mg-mole, mass to volume conversion factor at STP

C_c = lb/dcsf, mass concentration of VOC emissions as carbon, dry basis at STP

PMR_c = lb/hr, pollutant mass removal rate of VOC's as carbon

PMR_g = lb/hr, pollutant mass removal rate of of VOC's as gasoline

PMR = lb, pollutant mass removal of VOC's as gasoline

EQUATIONS

$PPM_{wet} = PPM_{measured}$

$PPM_{dry} = (PPM_{wet})/(1-B_{ws})$

$PPM_c = (PPM_d)(K)$

$C_{c:m} = (PPM_c)(M_c / K_3)$

$C_c = (C_{c:m})(62.43x10^{-9}$ lb-m^3/mg-$ft^3)$

$PMR_c = (C_c)(Q_{std})(60$ min/hr)

$PMR_g = (PMR_c)(M_g/M_{cg})$

$PMR = (PMR_g)(\#minutes/60)$

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
POST-TREATMENT EMISSION CALCULATIONS

SITE NAME: Rhodesway North AFVR EVENT DATE: 5/4/2015-5/8/15

Elapsed Time (min)	Flow (DSCFM)	$PPM_{measured}$ (ppm)	PPM_{wet} (ppm)	PPM_{dry} (ppm)	RF	PPM_{conc} (ppm)	$C_{c:m}$ (mg/dsm^3)	C_c (lb/dscf)	PMR_c (lb/hr)	PMR_g (lb/hr)	PMR (lb)
0	--	--	--	--	--	--	--	--	--	--	
30	38	110	110	119	1.02	121	61	0.00000	0.01	0.01	0.01
60	39	71	71	75	1.02	76	38	0.00000	0.01	0.01	0.00
90	31	60	60	63	1.02	64	32	0.00000	0.00	0.00	0.00
120	33	45	45	48	1.02	49	24	0.00000	0.00	0.00	0.00
150	30	15	15	16	1.02	16	8	0.00000	0.00	0.00	0.00
180	34	21	21	22	1.02	23	11	0.00000	0.00	0.00	0.00
210	28	55	55	58	1.02	59	30	0.00000	0.00	0.00	0.00
240	29	62	62	69	1.02	71	35	0.00000	0.00	0.00	0.00
270	38	180	180	190	1.02	194	97	0.00001	0.01	0.02	0.01
300	35	120	120	127	1.02	129	65	0.00000	0.01	0.01	0.00
330	33	430	430	454	1.02	463	231	0.00001	0.03	0.03	0.02
360	48	380	380	401	1.02	409	204	0.00001	0.04	0.04	0.02
390	47	240	240	253	1.02	258	129	0.00001	0.02	0.03	0.01
420	35	240	240	253	1.02	258	129	0.00001	0.02	0.02	0.01
450	35	260	260	270	1.02	275	137	0.00001	0.02	0.02	0.01
480	28	160	160	166	1.02	169	85	0.00001	0.01	0.01	0.01
540	33	200	200	207	1.02	211	105	0.00001	0.01	0.02	0.02
600	35	200	200	207	1.02	211	105	0.00001	0.01	0.02	0.02
660	37	160	160	166	1.02	169	84	0.00001	0.01	0.01	0.01
720	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
780	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
840	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
900	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
960	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
1020	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
1080	35	91	91	95	1.02	97	48	0.00000	0.01	0.01	0.01
1140	33	22	22	23	1.02	24	12	0.00000	0.00	0.00	0.00
1200	35	35	35	37	1.02	38	19	0.00000	0.00	0.00	0.00
1260	31	25	25	26	1.02	27	13	0.00000	0.00	0.00	0.00
1320	39	19	19	20	1.02	20	10	0.00000	0.00	0.00	0.00
1380	27	28	28	29	1.02	30	15	0.00000	0.00	0.00	0.00
1440	21	22	22	23	1.02	24	12	0.00000	0.00	0.00	0.00
1560	27	33	33	35	1.02	36	18	0.00000	0.00	0.00	0.00
1680	33	58	58	62	1.02	64	32	0.00000	0.00	0.00	0.01
1800	23	34	34	37	1.02	37	19	0.00000	0.00	0.00	0.00
1920	32	16	16	17	1.02	17	9	0.00000	0.00	0.00	0.00
2040	37	40	40	43	1.02	44	22	0.00000	0.00	0.00	0.01
2160	33	30	30	31	1.02	32	16	0.00000	0.00	0.00	0.00
2280	33	30	30	31	1.02	32	16	0.00000	0.00	0.00	0.00
2400	33	30	30	31	1.02	32	16	0.00000	0.00	0.00	0.00
2520	30	19	19	20	1.02	20	10	0.00000	0.00	0.00	0.00
2640	29	24	24	26	1.02	27	13	0.00000	0.00	0.00	0.00
2760	28	17	17	18	1.02	18	9	0.00000	0.00	0.00	0.00
2880	19	42	42	45	1.02	46	23	0.00000	0.00	0.00	0.00
3000	23	56	56	60	1.02	61	30	0.00000	0.00	0.00	0.01
3120	34	50	50	52	1.02	54	27	0.00000	0.00	0.00	0.01
3240	23	42	42	45	1.02	46	23	0.00000	0.00	0.00	0.00

APPENDIX L
AGGRESSIVE FLUID VAPOR RECOVERY EVENT DATA
POST-TREATMENT EMISSION CALCULATIONS

SITE NAME: Rhodesway North AFVR EVENT DATE: 5/4/2015-5/8/15

Elapsed Time (min)	Flow (DSCFM)	$PPM_{measured}$ (ppm)	PPM_{wet} (ppm)	PPM_{dry} (ppm)	RF	PPM_{conc} (ppm)	$C_{c:m}$ (mg/dsm^3)	C_c (lb/dscf)	PMR_c (lb/hr)	PMR_g (lb/hr)	PMR (lb)
3360	23	20	20	21	1.02	22	11	0.00000	0.00	0.00	0.00
3480	23	18	18	19	1.02	20	10	0.00000	0.00	0.00	0.00
3600	19	19	19	20	1.02	21	10	0.00000	0.00	0.00	0.00
3720	19	19	19	20	1.02	21	10	0.00000	0.00	0.00	0.00
3840	19	19	19	20	1.02	21	10	0.00000	0.00	0.00	0.00
3960	19	19	19	20	1.02	21	10	0.00000	0.00	0.00	0.00
4080	17	20	20	22	1.02	22	11	0.00000	0.00	0.00	0.00
4200	20	16	16	17	1.02	18	9	0.00000	0.00	0.00	0.00
4320	9	34	34	36	1.02	37	18	0.00000	0.00	0.00	0.00
4440	11	20	20	21	1.02	22	11	0.00000	0.00	0.00	0.00
4560	26	30	30	32	1.02	32	16	0.00000	0.00	0.00	0.00
4680	22	22	22	23	1.02	24	12	0.00000	0.00	0.00	0.00
4800	22	20	20	21	1.02	22	11	0.00000	0.00	0.00	0.00
4920	18	18	18	19	1.02	20	10	0.00000	0.00	0.00	0.00
5040	20	16	16	17	1.02	18	9	0.00000	0.00	0.00	0.00
5160	20	16	16	17	1.02	18	9	0.00000	0.00	0.00	0.00
5280	20	16	16	17	1.02	18	9	0.00000	0.00	0.00	0.00
5400	20	16	16	17	1.02	18	9	0.00000	0.00	0.00	0.00
5520	22	14	14	15	1.02	15	8	0.00000	0.00	0.00	0.00
5640	24	18	18	20	1.02	20	10	0.00000	0.00	0.00	0.00
5760	21	12	12	13	1.02	13	7	0.00000	0.00	0.00	0.00
Average	**29**	**69**	**69**	**73**	**1**	**75**	**37**	**0.00000**	**0.00**	**0.01**	**0.00**

Total Post-Treatment emissions in pounds: 0.32
Total Post-Treatment emissions in gallons: 0.05

NOTES

$PPM_{measured}$ = Actual measurements taken with TLV at the blower discharge piping in Parts Per Million (ppm)
100,000 ppm applied in calculation where TLV measurement was greater than 100,000 ppm (when applicable)
PPM_{wet} = "wet" concentration
PPM_{dry} = "dry" concentration
RF (Response Factor) = Multiplying factor for converting ppm meter readings of hexane-calibrated instruments to ppm concentrations of other gases: 1.02 for benzene; 1.03 for toluene; 1.64 for o-xylene. Multiplying factor obtained from Instruction Manual for TLV Sniffer® by Bacharach, Inc., Instruction 23-9613, rev.2, January 1990.
K = Number of carbons in calibration gas: (Methane K = 1, or Propane K = 3, or Hexane K = 6)
PPM_c= PPM_v, Volumetric concentration of VOC emissions as carbon, dry basis at STP
$C_{c:m}$ = mg/dsm^3, mass concentration of VOC emissions as carbon
M_c = 12.01 mg/mg-mole, molecular weight of carbon
K_3 = 24.07 $dsm^3/10^6$ mg-mole, mass to volume conversion factor at STP
C_c = lb/dcsf, mass concentration of VOC emissions as carbon, dry basis at STP
PMR_c = lb/hr, pollutant mass removal rate of VOC's as carbon
PMR_g = lb/hr, pollutant mass removal rate of of VOC's as gasoline
PMR = lb, pollutant mass removal of VOC's as gasoline

EQUATIONS

$PPM_{wet} = PPM_{measured}$
$PPM_{dry} = (PPM_{wet})/(1-B_{ws})$
$PPM_c = (PPM_d)(K)$
$C_{c:m} = (PPM_c)(M_c / K_3)$
$C_c = (C_{c:m})(62.43x10^{-9}$ lb-m^3/mg-$ft^3)$
$PMR_c = (C_c)(Q_{std})(60$ min/hr)
$PMR_g = (PMR_c)(M_g/M_{cg})$
$PMR = (PMR_g)(\#minutes/60)$

02567

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Highway
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Highway
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 clay		
2-13 Sand		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

UST 32 Inch DOCKETING

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
Well ID#: 02567-RW-4

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW- 25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Road, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4/25/15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

*Indicate Water Bearing Zones
(Use a 2nd sheet if needed)

5. REMARKS:
Well ID#: 02567-RW-5

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

5. REMARKS:
Well ID#: 02567-RW-6

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 4-27-15
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

5. REMARKS:
Well ID#: 02567-RW-7

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE: ☐ Residential ☐ Public Supply ☐ Process ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) 17538 Greenhill Rd, Char, NC 28278
Level: A ☐ B ☑ C ☐ D ☐ (circle one)
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ Date: 4-27-15
Well Driller

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

5. REMARKS:
Well ID#: 02567-RW-8

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/21/15
13 ft. Date Completed: 4/21/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

5. REMARKS:
Well ID#: 02567-RW-9

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/22/15
13 ft. Date Completed: 4/22/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft. NOTE: MULTIPLE SCREENS
_____ ft. and _____ ft. USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: Citgo (last) (first)
Address: 1400 Jeffries Hwy
City: Walterboro State: SC Zip:
Telephone: Work: Home:

2. LOCATION OF WELL: **COUNTY:**
Name: Citgo Service Station
Street Address: 1400 Jeffries Hwy
City: Walterboro, SC Zip:
Latitude: Longitude:

3. PUBLIC SYSTEM NAME: **PUBLIC SYSTEM NUMBER:**

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
0-2 Clay		
2-13 Sand		
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
Well ID#: 02567-RW-10

6. TYPE: ☐ Mud Rotary ☐ Jetted ☑ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

RECEIVED
JUN 29 2015
SITE ASSESSMENT, REMEDIATION & REVITALIZATION

7. PERMIT NUMBER: UMW-25841

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☐ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) Date Started: 4/22/15
13 ft. Date Completed: 4/22/15

10. CASING: ☑ Threaded ☐ Welded
Diam.: 4"
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
0 in. to 3 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☑
Surface _____ ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☑ No

11. SCREEN:
Type: PVC Diam.: 4"
Slot/Gauge: 0.01/sch.40 Length: 10'
Set Between: 3 ft. and 13 ft. **NOTE: MULTIPLE SCREENS**
_____ ft. and _____ ft. **USE SECOND SHEET**
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL _____ ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☑ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☑ No Bacterial Analysis ☐ Yes ☑ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 13 ft. to 2 ft.
Effective size #2med Uniformity Coefficient Sand

16. WELL GROUTED? ☑ Yes ☐ No
☐ Neat Cement ☐ Bentonite ☑ Bentonite/Cement ☐ Other _____
Depth: From 2 ft. to 0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☑ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☑
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: Tommy Bolyard **CERT. NO.:** 1846
Address: (Print) Level: A B C D (circle one) ☐ ☑ ☐ ☐
17538 Greenhill Rd, Char, NC 28278
Telephone No.: 704.607.7529 Fax No.: 803.548.2233

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: _____ (Well Driller) Date: 4-27-15

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

John B.

UST
JUL 17 2015
PROGRAM

UST
33 tech
DOCKETING

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET

1. CONTRACTOR OF CHOICE
As the UST Owner/Operator of Site #'s:

04864	04872	02567	02568	16751

I would like to use the contractor or person(s)* listed below and request that they represent me for: (check one)

XXXX Initial Groundwater Assessment
XXXX all future assessment scopes.**
XXXX all Corrective Actions
XXXX all releases

Name of Contractor/Person(s) TERRY Environmental Services, Inc.
Contractor # 223
Address P.O. Box 25
Summerville, South Carolina 29484
Telephone Number (843) 873-8200

Note: Site rehabilitation activities must be performed by a SCDHEC Certified Site Rehabilitation Contractor in accordance with R.61-98.
*indicate if person listed is your employee
** if you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.

2. FINANCIAL OR FAMILIAL RELATIONSHIP
Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above?

_____ Yes XXXXXX **No (please initial)**

Financial relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.
Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, daughter-in-law, step father, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT
You can pay the contractor and, upon submittal of the canceled check (or a notarized statement from the contractor), be compensated from the SUPERB Account, or have payment issued directly from us to the contractor.
I request that payment be made to me after I have paid the contractor _____ Yes _____ No (please initial)
I request that payment be made directly to the contractor. XXX Yes _____ No **(please initial)**

Note: All costs must receive prior financial approval from the Department regardless of payment option.

Underground Storage Tank Owner/Operator Signature _____

Print CLAYTON R. SMITH, EM

Date 7/15/15

Domenico Model (Oxygenates)

UST # 02567
Site Name: Dr Oil LLC
Modeler: John Bryant
Date: 7/22/2015

Groundwater Flow Parameters

K	-	ft/yr
dh/dx	-	
θ	0.2	dec. %
v_x	27	ft/yr

Transport Parameters

x_{max}	265	ft
y_{max}	0	ft
z	0	ft
Source Width	30	ft
Source Thickness	15	ft
Plume Length	265	ft
α_x	12.93966	ft
α_y	1.293966	ft
α_z	1.00E-99	ft

Simulation Time

t_{sim} 5 yrs

Aquifer Characteristics

ρ_d	1.7	kg/L
f_{oc}	0.0002	

Source Area CoC Data

CoC	C_{source} (mg/L)	K_{oc} (L/kg)
tBA	20	1
tAA	20	1
DIPE		1.5
tAME		1.5
EtBE		1.5
Ethanol		0.5

Retarded Velocity (ft/yr)

CoC	R	v_R
tBA	1.002	26.95
tAA	1.002	26.95
DIPE	1.003	26.93
tAME	1.003	26.93
EtBE	1.003	26.93
Ethanol	1.001	26.98

Simulation Points for Breakthrough Curves

x	0	ft
y	0	ft
z	0	ft

x	0	ft
y	0	ft
z	0	ft

$$C(x,y,z,t) = \left(\frac{C_0}{8}\right)\exp\left[\left(\frac{x}{2\alpha_x}\right)\left(1-\sqrt{1+\frac{4\lambda\alpha_x}{v}}\right)\right] erfc\left[\frac{x-vt\sqrt{1+\frac{4\lambda\alpha_x}{v}}}{2\sqrt{\alpha_x vt}}\right]\left\{erf\left[\frac{y+\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]-erf\left[\frac{y-\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]\right\}\left\{erf\left[\frac{z+Z}{2\sqrt{\alpha_z x}}\right]-erf\left[\frac{z-Z}{2\sqrt{\alpha_z x}}\right]\right\}$$

tBA Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	20	20
26.5		17.392
53		13.743
79.5		10.603
106		7.782
132.5		5.262
159		3.188
185.5		1.694
212		0.776
238.5		0.303
265	0.1	0.100

Temporal Calibration Data

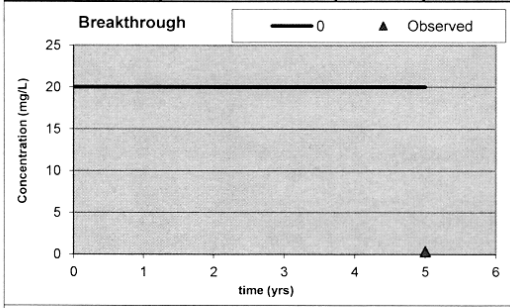
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		20		20
0.5		20.000		20.000
1		20.000		20.000
1.5		20.000		20.000
2		20.000		20.000
2.5		20.000		20.000
3		20.000		20.000
3.5		20.000		20.000
4		20.000		20.000
4.5		20.000		20.000
5	0.36	20.000		20.000

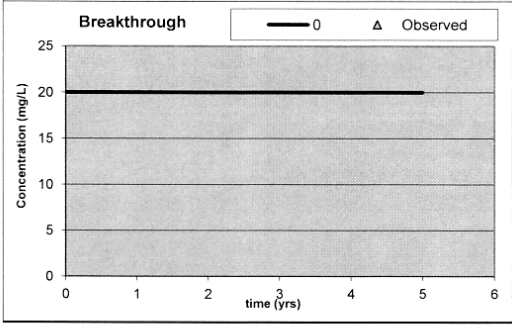
Site ID 02567

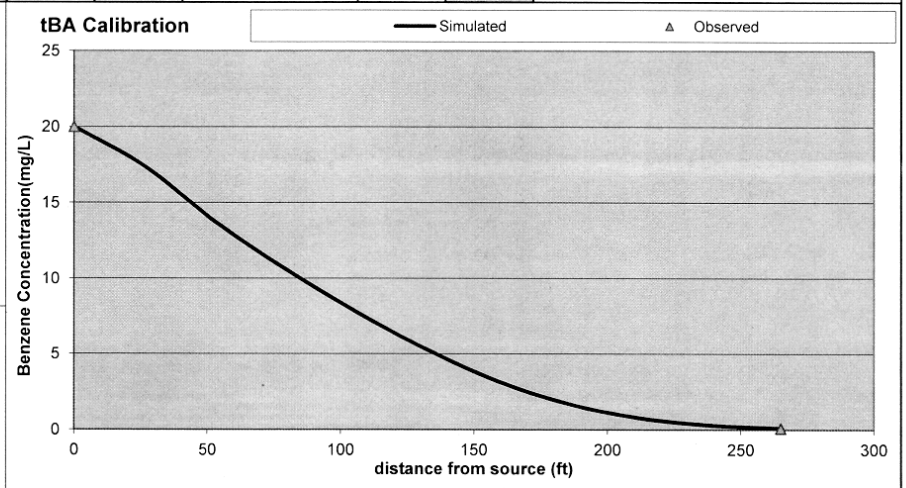
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	17	yrs	λ	0.04076	yr^{-1}
v_x	27	ft/yr			
R	1.002				
v_R	26.954	ft/yr	C_{source}	20	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041

tAA Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	20	20
26.5		17.392
53		13.743
79.5		10.603
106		7.782
132.5		5.262
159		3.188
185.5		1.694
212		0.776
238.5		0.303
265	0.1	0.100

Temporal Calibration Data

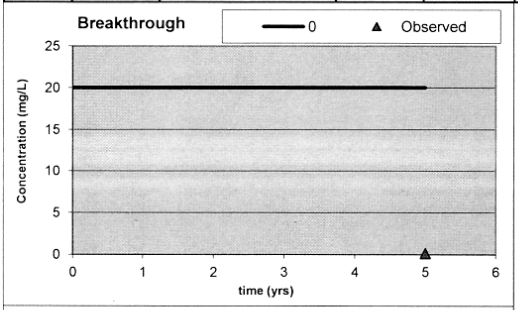
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		20		20
0.5		20.000		20.000
1		20.000		20.000
1.5		20.000		20.000
2		20.000		20.000
2.5		20.000		20.000
3		20.000		20.000
3.5		20.000		20.000
4		20.000		20.000
4.5		20.000		20.000
5	0.16	20.000		20.000

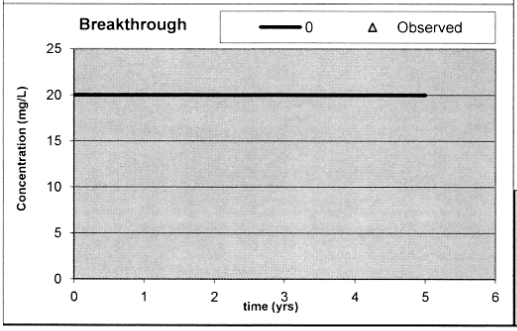
Site ID 02567

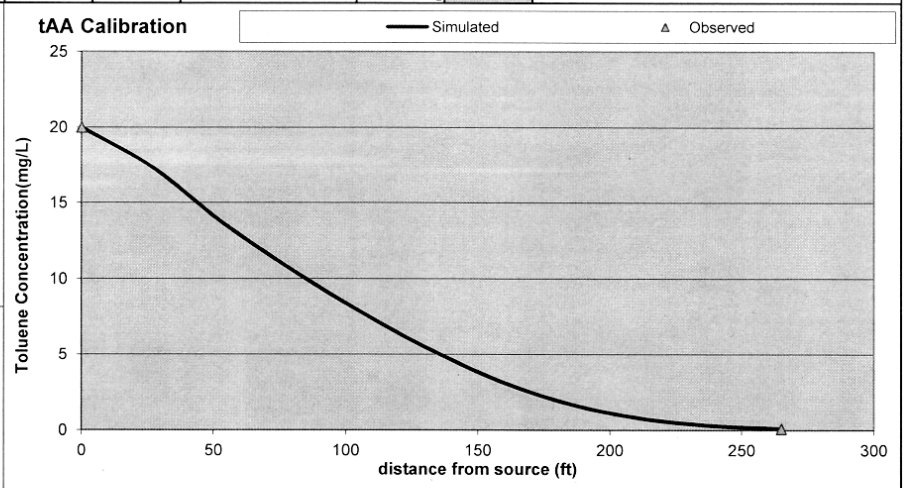
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	17	yrs	λ	0.04076	yr^{-1}
v_x	27	ft/yr			
R	1.002				
v_R	26.954	ft/yr	C_{source}	20	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			





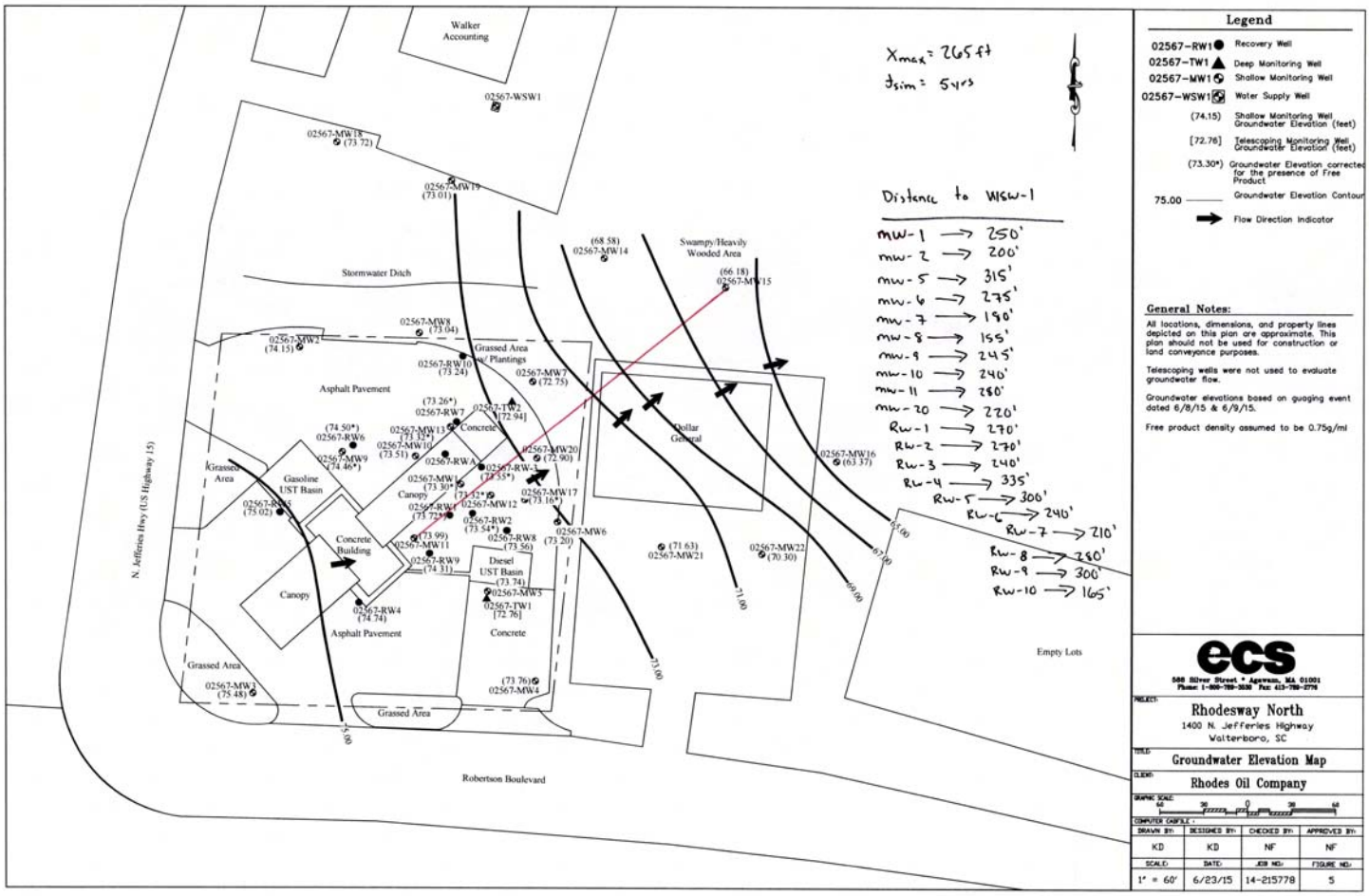


Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041
0	17.391606	13.7428878	10.6032369	7.78223734	5.26165271	3.1881215	1.693973	0.776423	0.303264	0.100041

SSTLs t 1000 yrs

UST Permit # 02567
Site Name: Dr Oil LLC

SSTLs in mg/L			RBSLs (mg/L):	1.400	0.240				
MW #	x (ft)	y (ft)	z (ft)	tBA SSTL	tAA SSTL				
MW-1	250	0	0	4.563	0.782				
MW-2	200	0	0	3.842	0.659				
MW-5	315	0	0	5.576	0.956				
MW-6	275	0	0	4.942	0.847				
MW-7	180	0	0	3.565	0.611				
MW-8	155	0	0	3.227	0.553				
MW-9	245	0	0	4.489	0.770				
MW-10	240	0	0	4.415	0.757				
MW-11	280	0	0	5.019	0.860				
MW-20	220	0	0	4.125	0.707				
RW-1	270	0	0	4.865	0.834				
RW-2	270	0	0	4.865	0.834				
RW-3	240	0	0	4.415	0.757				
RW-4	335	0	0	5.908	1.013				
RW-5	300	0	0	5.334	0.914				
RW-6	240	0	0	4.415	0.757				
RW-7	210	0	0	3.983	0.683				
RW-8	280	0	0	5.019	0.860				
RW-9	300	0	0	5.334	0.914				
RW-10	165	0	0	3.361	0.576				
			λ (yr^{-1}):	0.041	0.041				
			R:	1.002	1.002				



$X_{max} = 265$ ft

$t_{sim} = 5$ yrs

Distance to WSW-1

mw-1	250'
mw-2	200'
mw-5	315'
mw-6	275'
mw-7	190'
mw-8	155'
mw-9	245'
mw-10	240'
mw-11	280'
mw-20	220'
Rw-1	270'
Rw-2	270'
Rw-3	240'
Rw-4	335'
Rw-5	306'
Rw-6	240'
Rw-7	210'
Rw-8	280'
Rw-9	300'
Rw-10	165'

Legend

- 02567-RW1 ● Recovery Well
- 02567-TW1 ▲ Deep Monitoring Well
- 02567-MW1 Shallow Monitoring Well
- 02567-WSW1 Water Supply Well
- (74.15) Shallow Monitoring Well Groundwater Elevation (feet)
- [72.76] Telescoping Monitoring Well Groundwater Elevation (feet)
- (73.30*) Groundwater Elevation corrected for the presence of Free Product
- 75.00 Groundwater Elevation Contour
- Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Telescoping wells were not used to evaluate groundwater flow.

Groundwater elevations based on gauging event dated 6/8/15 & 6/9/15.

Free product density assumed to be 0.75g/ml

ecs
500 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-786-2776

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: Groundwater Elevation Map

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO:	FIGURE NO:
1" = 60'	6/23/15	14-215778	5

Domenico Model

UST # 02567
Site Name: Dr Oil LLC
Modeler: J. Bryant
Date: 7/22/2015

Groundwater Flow Parameters

K	-	ft/yr
dh/dx	-	
θ	0.2	dec. %
v_x	27	ft/yr

Transport Parameters

x_{max}	265	ft
y_{max}	0	ft
z	0	ft
Source Width	30	ft
Source Thickness	15	ft
Plume Length	265	ft
α_x	12.93966	ft
α_y	1.293966	ft
α_z	1.00E-99	ft

Simulation Time

t_{sim} 5 yrs

Aquifer Characteristics

ρ_d	1.7	kg/L
f_{oc}	0.0002	

Source Area CoC Data

CoC	C_{source} (mg/L)	K_{oc} (L/kg)
Benzene	15.1	81
Toluene	14.8	133
Ethylbenzene	2.96	176
Xylenes	13.4	639
Naphthalene	0.925	1543
MtBE	14.6	11
EDB		28
1,2-DCA		17.5

Retarded Velocity (ft/yr)

CoC	R	v_R
Benzene	1.138	23.73
Toluene	1.226	22.02
Ethylbenzene	1.299	20.78
Xylenes	2.086	12.94
Naphthalene	3.623	7.45
MtBE	1.019	26.50
EDB	1.048	25.77
1,2-DCA	1.030	26.22

Simulation Points for Breakthrough Curves

x	0	ft
y	0	ft
z	0	ft

x		ft
y		ft
z		ft

$$C(x,y,z,t) = \left(\frac{C_0}{8}\right)\exp\left[\left(\frac{x}{2\alpha_x}\right)\left(1-\sqrt{1+\frac{4\lambda\alpha_x}{v}}\right)\right] erfc\left[\frac{x-vt\sqrt{1+\frac{4\lambda\alpha_x}{v}}}{2\sqrt{\alpha_x vt}}\right]\left\{erf\left[\frac{y+\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]-erf\left[\frac{y-\frac{Y}{2}}{2\sqrt{\alpha_y x}}\right]\right\}\left\{erf\left[\frac{z+Z}{2\sqrt{\alpha_z x}}\right]-erf\left[\frac{z-Z}{2\sqrt{\alpha_z x}}\right]\right\}$$

Benzene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	15.1	15.1
26.5		9.504
53		5.477
79.5		3.145
106		1.755
132.5		0.917
159		0.433
185.5		0.179
212		0.063
238.5		0.019
265	0.005	0.005

Temporal Calibration Data

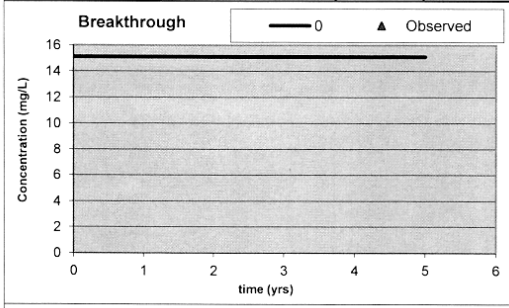
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		15.1		15.1
0.5		15.100		15.100
1		15.100		15.100
1.5		15.100		15.100
2		15.100		15.100
2.5		15.100		15.100
3		15.100		15.100
3.5		15.100		15.100
4		15.100		15.100
4.5		15.100		15.100
5		15.100		15.100

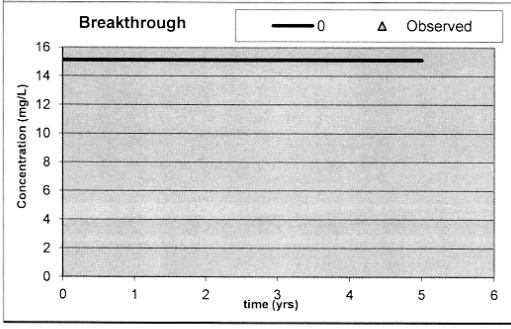
Site ID 02567

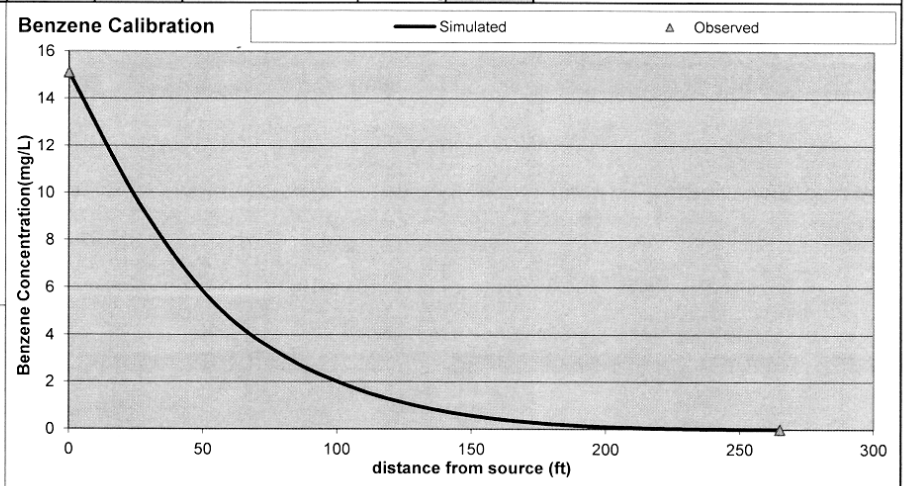
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	1.7	yrs	λ	0.40765	yr^{-1}
v_x	27	ft/yr			
R	1.138				
v_R	23.732	ft/yr	C_{source}	15.1	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	9.5042152	5.47741	3.14548716	1.75506334	0.91699903	0.4329059	0.179115	0.063417	0.018874	0.004661
0	9.5042152	5.47741	3.14548716	1.75506334	0.91699903	0.4329059	0.179115	0.063417	0.018874	0.004661
0	9.5042152	5.47741	3.14548716	1.75506334	0.91699903	0.4329059	0.179115	0.063417	0.018874	0.004661
0	9.5042152	5.47741	3.14548716	1.75506334	0.91699903	0.4329059	0.179115	0.063417	0.018874	0.004661
0	9.5042152	5.47741	3.14548716	1.75506334	0.91699903	0.4329059	0.179115	0.063417	0.018874	0.004661

Toluene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	14.8	14.8
26.5		10.666
53		6.957
79.5		4.402
106		2.611
132.5		1.393
159		0.645
185.5		0.253
212		0.082
238.5		0.022
265	0.005	0.005

Temporal Calibration Data

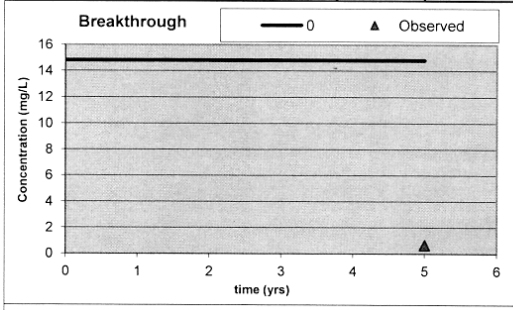
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		14.8		14.8
0.5		14.800		14.800
1		14.800		14.800
1.5		14.800		14.800
2		14.800		14.800
2.5		14.800		14.800
3		14.800		14.800
3.5		14.800		14.800
4		14.800		14.800
4.5		14.800		14.800
5	0.669	14.800		14.800

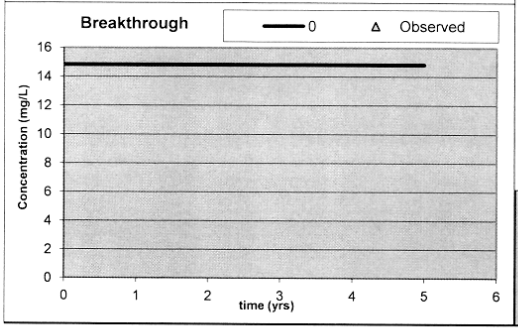
Site ID 02567

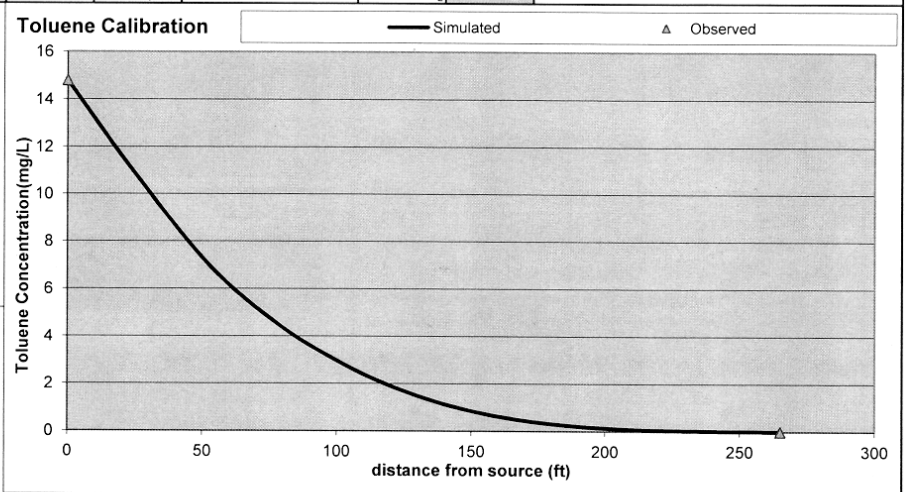
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	3.2	yrs	λ	0.21656	yr^{-1}
v_x	27	ft/yr			
R	1.226				
v_R	22.021	ft/yr	C_{source}	14.8	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	10.6657007	6.95669054	4.40219836	2.61079298	1.39263068	0.6451279	0.252619	0.081976	0.021734	0.00466
0	10.6657007	6.95669054	4.40219836	2.61079298	1.39263068	0.6451279	0.252619	0.081976	0.021734	0.00466
0	10.6657007	6.95669054	4.40219836	2.61079298	1.39263068	0.6451279	0.252619	0.081976	0.021734	0.00466
0	10.6657007	6.95669054	4.40219836	2.61079298	1.39263068	0.6451279	0.252619	0.081976	0.021734	0.00466
0	10.6657007	6.95669054	4.40219836	2.61079298	1.39263068	0.6451279	0.252619	0.081976	0.021734	0.00466

Ethylbenzene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	2.96	2.96
26.5		2.255
53		1.542
79.5		1.002
106		0.596
132.5		0.311
159		0.137
185.5		0.050
212		0.015
238.5		0.004
265	0.005	0.001

Temporal Calibration Data

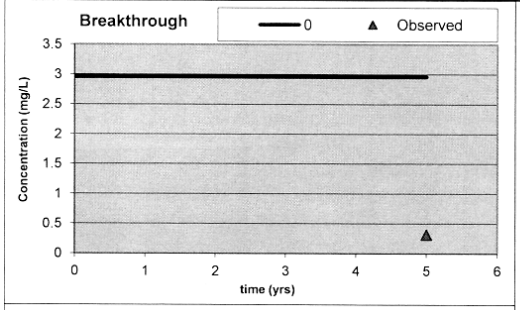
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		2.96		2.96
0.5		2.960		2.960
1		2.960		2.960
1.5		2.960		2.960
2		2.960		2.960
2.5		2.960		2.960
3		2.960		2.960
3.5		2.960		2.960
4		2.960		2.960
4.5		2.960		2.960
5	0.318	2.960		2.960

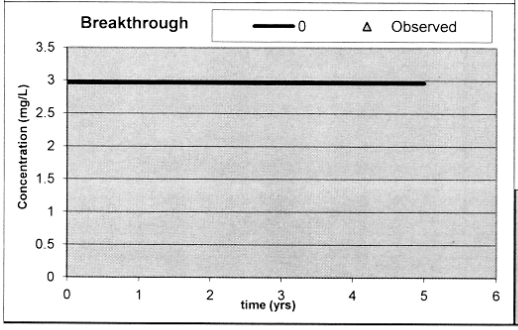
Site ID 02567

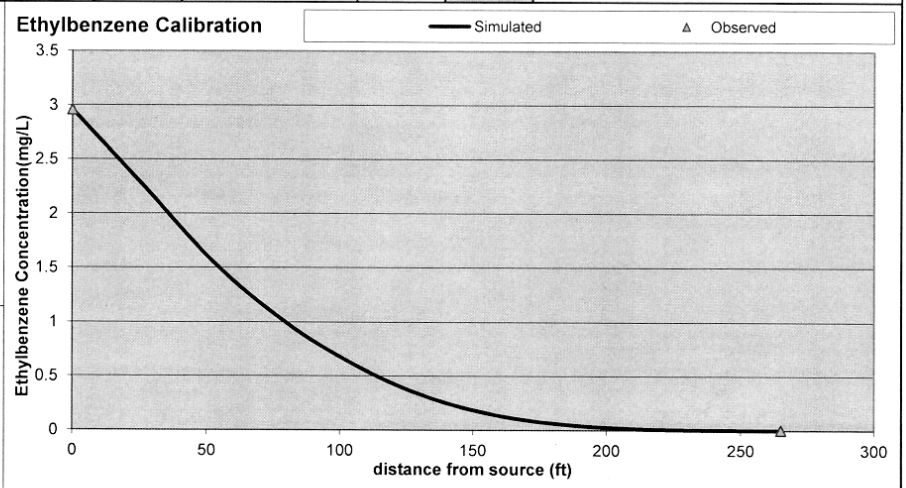
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	5	yrs	λ	0.1386	yr^{-1}
v_x	27	ft/yr			
R	1.299				
v_R	20.782	ft/yr	C_{source}	2.96	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	2.25539054	1.54181987	1.00230122	0.59591696	0.31062113	0.1372143	0.050095	0.014847	0.003527	0.000666
0	2.25539054	1.54181987	1.00230122	0.59591696	0.31062113	0.1372143	0.050095	0.014847	0.003527	0.000666
0	2.25539054	1.54181987	1.00230122	0.59591696	0.31062113	0.1372143	0.050095	0.014847	0.003527	0.000666
0	2.25539054	1.54181987	1.00230122	0.59591696	0.31062113	0.1372143	0.050095	0.014847	0.003527	0.000666
0	2.25539054	1.54181987	1.00230122	0.59591696	0.31062113	0.1372143	0.050095	0.014847	0.003527	0.000666

Xylenes Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	13.4	13.4
26.5		8.781
53		4.853
79.5		2.262
106		0.830
132.5		0.226
159		0.044
185.5		0.006
212		0.001
238.5		0.000
265	0.005	0.000

Temporal Calibration Data

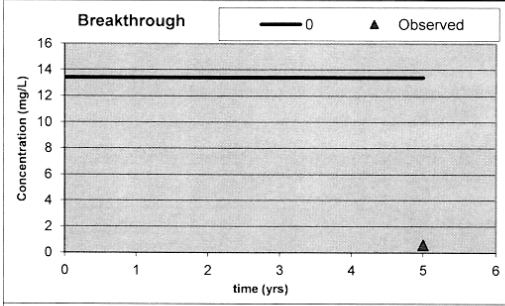
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		13.4		13.4
0.5		13.400		13.400
1		13.400		13.400
1.5		13.400		13.400
2		13.400		13.400
2.5		13.400		13.400
3		13.400		13.400
3.5		13.400		13.400
4		13.400		13.400
4.5		13.400		13.400
5	0.591	13.400		13.400

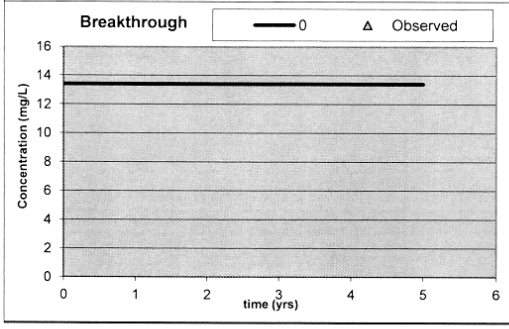
Site ID 02567

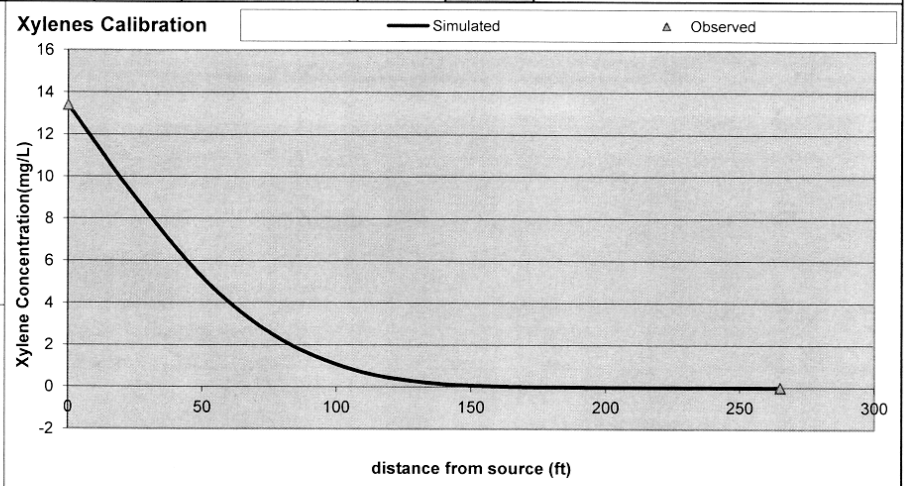
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	5	yrs	λ	0.1386	yr^{-1}
v_x	27	ft/yr			
R	2.086				
v_R	12.942	ft/yr	C_{source}	13.4	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	8.78081909	4.85277863	2.26206942	0.82990206	0.22642524	0.0442191	0.00603	0.000565	3.6E-05	1.54E-06
0	8.78081909	4.85277863	2.26206942	0.82990206	0.22642524	0.0442191	0.00603	0.000565	3.6E-05	1.54E-06
0	8.78081909	4.85277863	2.26206942	0.82990206	0.22642524	0.0442191	0.00603	0.000565	3.6E-05	1.54E-06
0	8.78081909	4.85277863	2.26206942	0.82990206	0.22642524	0.0442191	0.00603	0.000565	3.6E-05	1.54E-06
0	8.78081909	4.85277863	2.26206942	0.82990206	0.22642524	0.0442191	0.00603	0.000565	3.6E-05	1.54E-06

MtBE Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	14.6	14.6
26.5		7.914
53		3.958
79.5		2.011
106		1.026
132.5		0.514
159		0.245
185.5		0.108
212		0.043
238.5		0.015
265	0.005	0.005

Temporal Calibration Data

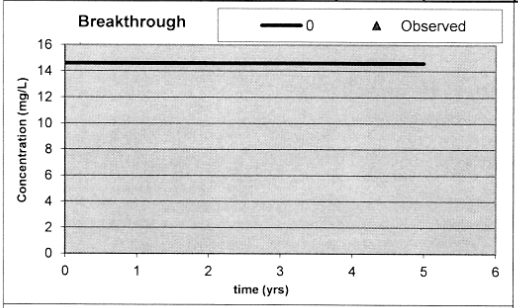
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		14.6		14.6
0.5		14.600		14.600
1		14.600		14.600
1.5		14.600		14.600
2		14.600		14.600
2.5		14.600		14.600
3		14.600		14.600
3.5		14.600		14.600
4		14.600		14.600
4.5		14.600		14.600
5		14.600		14.600

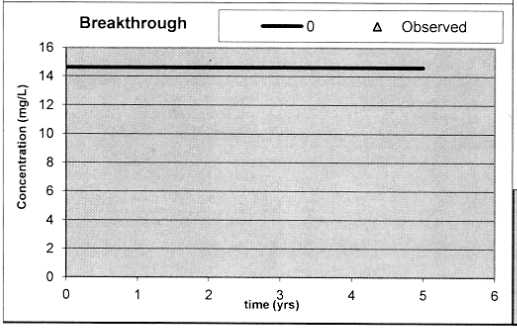
Site ID 02567

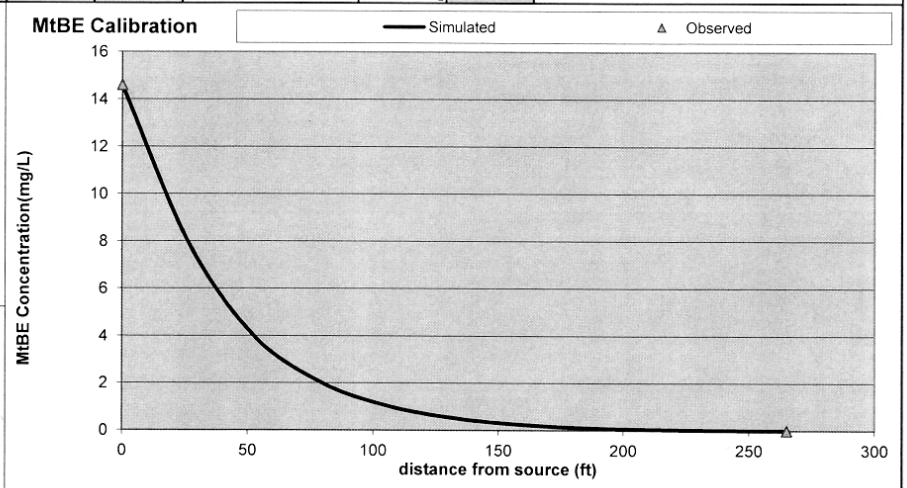
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	1	yrs	λ	0.693	yr^{-1}
v_x	27	ft/yr			
R	1.000				
v_R	27.000	ft/yr	C_{source}	14.6	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			







Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	7.91379481	3.95751871	2.01086747	1.02646213	0.51383976	0.2452186	0.108356	0.043163	0.015158	0.004612
0	7.91379481	3.95751871	2.01086747	1.02646213	0.51383976	0.2452186	0.108356	0.043163	0.015158	0.004612
0	7.91379481	3.95751871	2.01086747	1.02646213	0.51383976	0.2452186	0.108356	0.043163	0.015158	0.004612
0	7.91379481	3.95751871	2.01086747	1.02646213	0.51383976	0.2452186	0.108356	0.043163	0.015158	0.004612
0	7.91379481	3.95751871	2.01086747	1.02646213	0.51383976	0.2452186	0.108356	0.043163	0.015158	0.004612

Naphthalene Calibration

Spatial Calibration Data (centerline)

x	C_{obs} (mg/L)	C_{sim} (mg/L)
0	0.925	0.925
26.5		0.775
53		0.592
79.5		0.443
106		0.317
132.5		0.211
159		0.126
185.5		0.066
212		0.030
238.5		0.012
265	0.005	0.004

Temporal Calibration Data

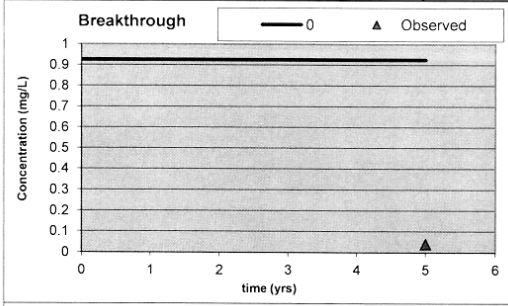
	0		0	
t (yrs)	C_{obs} (mg/L)	C_{sim} (mg/L)	C_{obs} (mg/L)	C_{sim} (mg/L)
0		0.925		0.925
0.5		0.925		0.925
1		0.925		0.925
1.5		0.925		0.925
2		0.925		0.925
2.5		0.925		0.925
3		0.925		0.925
3.5		0.925		0.925
4		0.925		0.925
4.5		0.925		0.925
5	0.0401	0.925		0.925

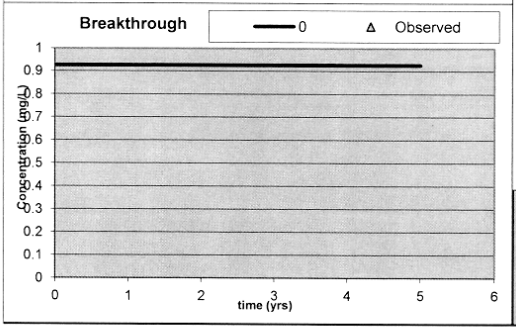
Site ID 02567

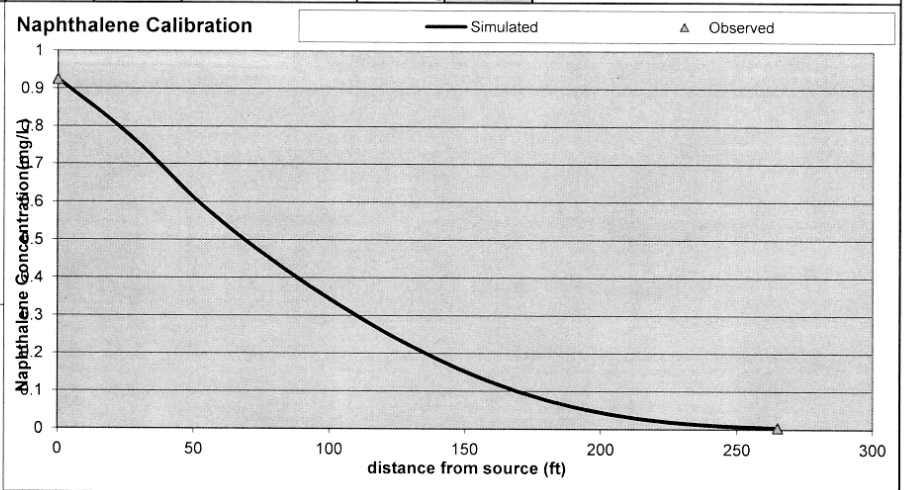
Site Name Dr Oil LLC

Model Calibration Parameters

$t_{1/2}$	8	yrs	λ	0.08663	yr^{-1}
v_x	27	ft/yr			
R	1.000				
v_R	27.000	ft/yr	C_{source}	0.925	mg/L
L_p	265	ft			
α_x	12.93966	ft	t_{sim}	5	yrs
α_y	1.293966	ft			
α_z	1E-99	ft			





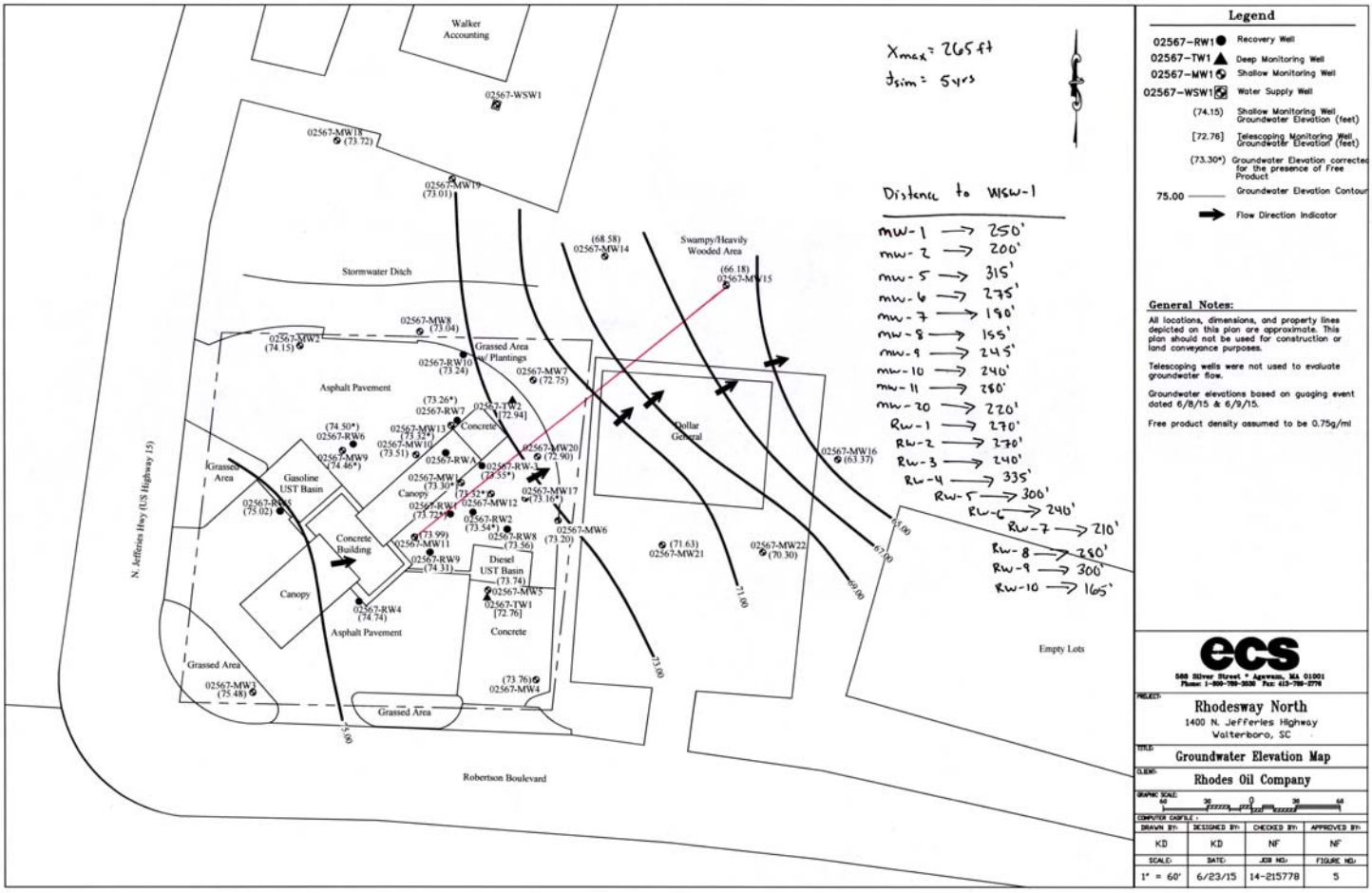


Source	26.5	53	79.5	106	132.5	159	185.5	212	238.5	265
0	0.77536074	0.59157445	0.44297404	0.31738897	0.21067696	0.1259414	0.066283	0.030185	0.011742	0.003865
0	0.77536074	0.59157445	0.44297404	0.31738897	0.21067696	0.1259414	0.066283	0.030185	0.011742	0.003865
0	0.77536074	0.59157445	0.44297404	0.31738897	0.21067696	0.1259414	0.066283	0.030185	0.011742	0.003865
0	0.77536074	0.59157445	0.44297404	0.31738897	0.21067696	0.1259414	0.066283	0.030185	0.011742	0.003865
0	0.77536074	0.59157445	0.44297404	0.31738897	0.21067696	0.1259414	0.066283	0.030185	0.011742	0.003865

SSTLs t 1000 yrs

UST Permit # 02567
Site Name: Dr Oil LLC

SSTLs in mg/L			RBSLs (mg/L):	0.005	1.000	0.700	10.000	0.040	0.025		
MW #	x (ft)	y (ft)	z (ft)	Benzene SSTL	Toluene SSTL	Ethylbenzene SSTL	Xylenes SSTL	MtBE SSTL	Naphthalene SSTL		
MW-1	250	0	0	0.419	20.432	7.373	243.841	14.473	0.122		
MW-2	200	0	0	0.184	11.917	4.910	137.279	4.751	0.095		
MW-5	315	0	0	1.190	40.242	12.223	502.847	60.180	0.165		
MW-6	275	0	0	0.627	26.586	8.978	322.942	25.102	0.137		
MW-7	180	0	0	0.132	9.548	4.148	108.444	3.025	0.085		
MW-8	155	0	0	0.086	7.192	3.338	80.257	1.709	0.074		
MW-9	245	0	0	0.386	19.375	7.085	230.414	12.958	0.119		
MW-10	240	0	0	0.356	18.370	6.807	217.690	11.599	0.116		
MW-11	280	0	0	0.680	28.012	9.335	341.466	28.014	0.140		
MW-20	220	0	0	0.256	14.819	5.790	173.142	7.435	0.105		
RW-1	270	0	0	0.579	25.229	8.634	305.383	22.491	0.134		
RW-2	270	0	0	0.579	25.229	8.634	305.383	22.491	0.134		
RW-3	240	0	0	0.356	18.370	6.807	217.690	11.599	0.116		
RW-4	335	0	0	1.634	49.381	14.224	625.836	92.937	0.180		
RW-5	300	0	0	0.937	34.478	10.897	426.282	43.394	0.154		
RW-6	240	0	0	0.356	18.370	6.807	217.690	11.599	0.116		
RW-7	210	0	0	0.217	13.295	5.334	154.237	5.946	0.100		
RW-8	280	0	0	0.680	28.012	9.335	341.466	28.014	0.140		
RW-9	300	0	0	0.937	34.478	10.897	426.282	43.394	0.154		
RW-10	165	0	0	0.102	8.063	3.645	90.610	2.150	0.078		
			λ (yr^{-1}):	0.408	0.217	0.139	0.139	0.693	0.087		
			R:	1.138	1.226	1.299	2.086	1.000	1.000		
			Pure Substance Solubility:	1750	526	169	175	5110	31		
			Effective Solubility:	44.39	26.54	3.7	21.68	173	6.7		



Legend

- 02567-RW1 ● Recovery Well
- 02567-TW1 ▲ Deep Monitoring Well
- 02567-MW1 ⊕ Shallow Monitoring Well
- 02567-WSW1 ⊠ Water Supply Well
- (74.15) Shallow Monitoring Well Groundwater Elevation (feet)
- [72.76] Telescoping Monitoring Well Groundwater Elevation (feet)
- (73.30*) Groundwater Elevation corrected for the presence of Free Product
- 75.00 Groundwater Elevation Contour
- Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Telescoping wells were not used to evaluate groundwater flow.

Groundwater elevations based on gauging event dated 6/8/15 & 6/9/15.

Free product density assumed to be 0.75g/ml

ecs
888 Silver Street * Agawam, MA 01001
Phone: 1-800-786-3038 Fax: 413-786-2778

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: Groundwater Elevation Map

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 60 30 0 30 60

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
KD	KD	NF	NF
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 60'	6/23/15	14-215778	5

D H E C
PROMOTE PROTECT PROSPER

Catherine E. Heigel, Director
Promoting and protecting the health of the public and the environment

JULY 22, 2015

LAWTON R. SMITH
RHODES OIL COMPANY, INC.
PO BOX 1545
WALTERBORO SC 29488

Re: **Corrective Action Options**
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC 29488
UST Permit # 02567
Release Reported April 14, 2011
Assessment Report received June 29, 2015
Colleton County

Dear Mr. Smith,

The Underground Storage Tank (UST) Management Division (Division) of the South Carolina Department of Health and Environmental Control (Agency) has reviewed the referenced report submitted by ECS on your behalf. The report indicates that active corrective action is necessary at the site to mitigate petroleum impact and ensure that there is no detrimental exposure to human health or the environment.

Funds from the State Underground Petroleum Environmental Response Bank (SUPERB) Account will soon be available for active corrective action. The selected technology must reduce the petroleum chemicals of concern (CoC) concentrations to site-specific target levels (SSTLs) determined by the Division.

The SUPERB Site Rehabilitation and Fund Access Regulations R.61-98 require the UST owner/operator to develop and implement a reasonable, cost-effective corrective action to be performed by an Agency-certified site rehabilitation contractor. As the owner/operator for the release reported on April 14, 2011, you may choose one of two options as to how to proceed with this requirement: state lead or owner/operator lead.

State Lead Option:

- If you choose the state lead option, the Division will procure a certified site rehabilitation contractor to perform corrective action on your behalf. The Agency will enter into an enforceable contract with the awarded contractor. As long as you do not interfere with or prohibit the work at your site, you will not be responsible in the event the state selected contractor does not perform appropriately or does not make satisfactory progress towards achieving the established corrective action goals. **To utilize the state lead option, please sign and return the applicable Permission and Right-of-Entry forms within 15 days of the date of this letter.**

Owner/Operator Lead Option:

- If you select the owner/operator lead option, you will be required to select a contractor to perform the corrective action. In order to assist you in determining the clean-up technology, time frame, clean-up levels, and associated costs, the Division will prepare a technical specification package and provide you copies to send to contractors of your choice. In addition, the Division will announce the request for solicitations in the South Carolina Business Opportunities, a bi-weekly state government publication, to ensure that an adequate solicitation response is obtained so that a fair and competitive price can be established. This announcement will clearly indicate that you will select the contractor to implement the corrective action.
- Compensation to the contractor will be from the SUPERB Account, but you may have the obligation to pay your selected contractor for any costs not approved by the Agency.
- The Division strongly suggests that a written contract between you and the selected contractor be developed following the completion of the solicitation process. The parties to this contract would be you and the contractor you choose; the Agency would not be a party to this contract. The Division's function would be to monitor and ensure progress of corrective action activities.
- If the contractor you select does not or cannot complete the required activities, you will be required to find another certified contractor to complete the required activities for the remainder of the existing financial approval amount. No additional funding from the SUPERB Account may be allowed. Under R.61-92, Part 280 of the Underground Storage Tank Control Regulations, you as the owner/operator are ultimately responsible to the Agency for the actions of your contractor. The Agency will pursue enforcement actions against you if the contractor you select does not make satisfactory progress towards achieving established corrective actions goals. **To utilize the owner/operator lead option, please sign and return the enclosed Active Corrective Action Options Form within 15 days of the date of this letter.**

On all correspondence or inquiries regarding this project, please reference UST Permit **#02567**. If you have any questions, please contact me at (803) 898-0606 or bryantjc@dhec.sc.gov.

Sincerely,

John C. Bryant, Hydrogeologist
Corrective Action Section
UST Management Division
Bureau of Land and Waste Management

enc: Permission/Right-of-Entry forms
Active Corrective Action Options form

cc: Technical File (w/enc)

State Lead Option

PERMISSION FORM

UNDERGROUND STORAGE TANK AND PROPERTY OWNER

UST Permit #02567

If you are both the owner of the former or existing underground storage tanks for the release reported on April 14, 2011 and the current property owner, please complete this form.

I, _____, certify that I am the identified legal owner of the underground storage tanks for the release reported on April 14, 2011 and property located at the facility identified below or serve as the authorized representative for the owner. I grant permission to the South Carolina Department of Health and Environmental Control (Agency) to secure on my behalf contractor services to conduct assessment and corrective action activities as required, and authorize the Agency, or a contractor selected by the Agency, to enter this property at reasonable times only to accomplish these site rehabilitation tasks. The contractor(s) will be designated as my contractor for only the required site rehabilitation activities. Compensation to the contractor(s) will be from the SUPERB Account and I will have no obligation to pay the contractor(s). I understand that the Agency or its contractor will be responsible for notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Division of Underground Storage Tank Management in writing.

Name of Facility _____Phone # _____

Street Address of Facility _____

Town, City, District, Suburb _____

Name of nearest intersecting street, road, highway, alley _____

_____Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

Is the property currently leased or rented to someone? (yes or no) _____. If yes, please provide their name _____and phone number _____

_____and let them know about the pending site rehabilitation activities. If vehicles or other mobile structures are parked over the monitoring wells, they should be moved before the Agency's contractor arrives at the site.

NAME of UST/property owner (Please Print):_____

Phone Number (home)_____(work)_____

Signature of UST/property Owner:_____

Witness:_____

Date:_____Month _____Day_____Year

State Lead Option

PERMISSION FORM

UNDERGROUND STORAGE TANK OWNER

UST Permit #02567

If you are the owner of the former or existing underground storage tanks for the release reported on April 14, 2011 or are designated as their authorized representative, but do not own the property, please complete this form.

I, _____ certify that I am the legal owner of the former and/or existing underground storage tank(s) located at the facility identified below and for the release reported on April 14, 2011 or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (Agency) to secure on my behalf services of a contractor to conduct assessment and corrective action activities, as required. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Division of Underground Storage Tank Management in writing.

Name of Facility _____ Phone # _____

Street Address of Facility _____

Town, City, District, Suburb _____

Name of nearest intersecting street, road, highway, alley _____

_____ Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

NAME of UST owner (Please Print):_____

Phone Number (home)_____ (work)_____

Signature of UST Owner:_____

Witness:_____

Date:_____ Month _____ Day_____ Year

State Lead Option

RIGHT-OF-ENTRY FORM

PROPERTY OWNER

UST Permit #02567

If you are the Property Owner or are the authorized representative for that person, but did not own the former or existing underground storage tanks at the time the release was reported, please complete this form.

I, _____, certify that I am the legal owner of the property identified below or serve as the authorized representative for the property owner. I authorize the South Carolina Department of Health and Environmental Control (Agency), or a contractor selected by the Agency, to enter this property at reasonable times only to conduct assessment and corrective action activities, as required. The contractor will be designated as the contractor for the UST owner or operator for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will notify me of all activities that are necessary prior to their initiation and will promptly provide to me a summary of the data upon request.

Name of Facility _____Phone # _____

Street Address of Facility _____

Town, City, District, Suburb _____

Name of nearest intersecting street, road, highway, alley _____

_____Is this facility within the city limits? (yes or no) _____

Does a public water or sewer utility service this facility? (yes or no) _____, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____

_____, phone number _____

Is the property currently leased or rented to someone? (yes or no) _____. If yes, please provide their name _____and phone number _____ and let them know about the pending site rehabilitation activities. If vehicles or other mobile structures are parked over the monitoring wells, they should be moved before the Agency's contractor arrives at the site.

NAME of Property owner (Please Print):_____

Phone Number (home)_____ (work)_____

Current Mailing Address:_____

Signature of Property Owner:_____

Witness:_____

Date:_____Month _____Day_____Year

Owner/ Operator Lead Option

ACTIVE CORRECTIVE ACTION OPTIONS FORM

UST PERMIT #02567

I, _____, certify that I am the legal owner on record for the underground storage tanks at the facility identified below for the release reported on June 8, 1988 or serve as the authorized representative for the owner. I wish to secure price quotations for corrective action activities as required by the Agency, and to select my own corrective action contractor after price quotation results are received. I understand that the Agency will also advertise for price quotations in the South Carolina Business Opportunities and provide the results to me. **I understand compensation to the contractor will be from the SUPERB Account, but I may have the obligation to pay the contractor for any costs not approved by the Agency. I understand that if the contractor I select does not or cannot complete the required activities, I will be required to find another certified contractor to complete the required activities for the remainder of the existing financial approval amount and that no additional funding from the SUPERB Account may be allowed. I also understand that the Agency will pursue enforcement actions against me if the contractor I select does not make satisfactory progress towards achieving established corrective actions goals.**

NAME of UST owner or authorized representative (Please Print):_____

Phone Number (home)_____ (work)_____

Signature of UST Owner:_____

Date:_____

Witness:_____

Date:_____

State Lead Option

PERMISSION FORM

UNDERGROUND STORAGE TANK OWNER

UST Permit **#02567**

If you are the owner of the former or existing underground storage tanks for the release reported on April 14, 2011 or are designated as their authorized representative, but do not own the property, please complete this form.

I, LAWTON R. SMITH (RHODES OIL CO., PRESIDENT) certify that I am the legal owner of the former and/or existing underground storage tank(s) located at the facility identified below and for the release reported on April 14, 2011 or serve as the authorized representative for the UST owner. I grant permission to the South Carolina Department of Health and Environmental Control (Agency) to secure on my behalf services of a contractor to conduct assessment and corrective action activities, as required. The contractor will be designated as my contractor for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will be responsible for obtaining right-of-entry from the property owner and notifying me of all activities that are necessary prior to their initiation and will promptly provide to me a copy of each environmental report. I understand that I may choose to select my own contractor at the completion of any phase of work by notifying the Division of Underground Storage Tank Management in writing.

Name of Facility RHODES WAY #102 Phone # 843-549-1739

Street Address of Facility 1400 NORTH JEFFERIES BLVD

Town, City, District, Suburb WALTERBORO SC 29488

Name of nearest intersecting street, road, highway, alley HIGHWAY 15 AND ROBERTSON BLVD

Is this facility within the city limits? (yes or no) YES

Does a public water or sewer utility service this facility? (yes or no) YES, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____, phone number _____

NAME of UST owner (Please Print): RHODES ~~DR~~ OIL COMPANY

Phone Number (home) 843-549-5521 (work) 512-516-2848

Signature of UST Owner: [signature]

Witness: Kim Pinnix

Date: JULY Month 31 Day 2015 Year

UST DOCKETING 37466

State Lead Option

RIGHT-OF-ENTRY FORM

PROPERTY OWNER

UST Permit **#02567**

If you are the Property Owner or are the authorized representative for that person, but did not own the former or existing underground storage tanks at the time the release was reported, please complete this form.

I, DIEGO RAFAEL, certify that I am the legal owner of the property identified below or serve as the authorized representative for the property owner. I authorize the South Carolina Department of Health and Environmental Control (Agency), or a contractor selected by the Agency, to enter this property at reasonable times only to conduct assessment and corrective action activities, as required. The contractor will be designated as the contractor for the UST owner or operator for only the required environmental site rehabilitation activities. Compensation to the contractor will be from the SUPERB Account and I will have no obligation to pay the contractor. I understand that the Agency or its contractor will notify me of all activities that are necessary prior to their initiation and will promptly provide to me a summary of the data upon request.

Name of Facility SCV #102 Phone # 843-549-1739

Street Address of Facility 1400 NORTH JEFFERIES BOULEVARD

Town, City, District, Suburb WALTERBORO, SOUTH CAROLINA

Name of nearest intersecting street, road, highway, alley HIGHWAY 15 AND ROBERTSON BOULEVARD

Is this facility within the city limits? (yes or no) YES

Does a public water or sewer utility service this facility? (yes or no) YES, if no, please provide the name and phone number of a person that we can contact that can assist in the location of private water and septic tank lines _____, phone number _____

Is the property currently leased or rented to someone? (yes or no) YES. If yes, please provide their name SCV OIL and phone number 843-549-5521 and let them know about the pending site rehabilitation activities. If vehicles or other mobile structures are parked over the monitoring wells, they should be moved before the Agency's contractor arrives at the site.

NAME of Property owner (Please Print): DR OIL

Phone Number (home) 8328153857 (work) 8435495521

Current Mailing Address: 305 Moore St, Walterboro, SC. 29488.

Signature of Property Owner: _____

Witness: _____

Date: 08/12/15 Month August Day 2015. Year

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

DEC 02 2011

UST Tech DOCKETING

Re: QAPP Contractor Addendum Directive for Tier I
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567
Release Reported April 14, 2011
Limited Phase II Soil Contamination Report dated November 29, 2010
Site Check Report received April 14, 2011
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Phase II by Whitaker Laboratory, Incorporated and site check reports submitted by Environmental Compliance Services, Incorporated. The reports document that groundwater concentrations of Benzene, Ethylbenzene, Xylenes, and Naphthalene are above risk-based screening levels (RBSLs).

To determine what risk the referenced release may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a Tier I Assessment as outlined in the UST Quality Assurance Program Plan (QAPP) is necessary. The Tier I must be conducted in accordance with the UST Management Division QAPP and must be conducted in compliance with all applicable regulations once the site specific QAPP Contractor Addendum is approved. A copy of SCDHEC QAPP for the UST Management Division is available at http://www.scdhec.gov/environment/lwm/html/ust.htm. **Your contractor must complete and submit the QAPP Contractor Addendum within thirty (30) days of the date of this letter.** The QAPP should include sampling of all water supply wells within 500 feet of this facility. **Please note that approval from the Department must be issued before work begins.**

Please be aware that the release is not currently qualified for funding from the State Underground Petroleum Environmental Response Bank (SUPERB) Account. SUPERB funds cannot be expended for site rehabilitation until a completed SUPERB application is on file with the Division of UST Management. The SUPERB application form should be completed and sent to this office to the attention of Denise Place. Our records indicate that a site rehabilitation contactor has not been selected for this release. **The enclosed form should be completed and returned to my attention within fifteen (15) days of the date of this letter.** A list of certified contractors is enclosed for your information.

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: UST Owner/Operator Selection Form
List of Certified Contractors

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708 (without enc.)
Technical file (with Owner/Operator Selection Form)

Return to Arthur Shrader

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET

1. CONTRACTOR OF CHOICE

As the UST Owner/Operator of the UST Permit #02567, I would like to use the contractor or person(s)* listed below and request that they represent me for:

☐ Tier I
☐ All future assessment scopes. **

Name of Contractor/Person(s) _____

Address _____

_____

_____

Telephone Number _____ Certification # _____

Note: After September 20, 1997, rehabilitation activities must be performed by a SC Certified Site Rehabilitation Contractor.

*indicate if the person listed is your own employee

** if you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above? _____ Yes _____ No (please initial)

Financial Relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT

The first $25,000.00 in eligible site rehabilitation costs will be applied against the applicable SUPERB deductible, upon submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment.

For eligible costs exceeding the $25,000.00 deductible, you can pay the contractor and, upon the submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (check one)

_____ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

_____ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor.

(Note: all costs must receive prior financial approval from the Department regardless of payment option.)

Underground Storage Tank Owner/Operator Signature _____

Printed Name _____

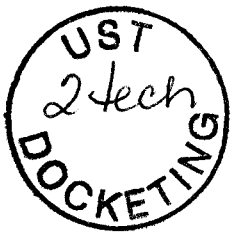
Date Signed _____

RHODES OIL COMPANY, INC.

Serving the South Carolina Lowcountry
305 Moore Street • P. O. Box 1545 • Walterboro, SC 29488
Tel: 843-549-5521 • Fax: 843-549-9529
office@rhodesoil.com

December 12, 2011

Mr. Arthur Schrader
SCDHEC
UST Management Division
2600 Bull Street
Columbia, S.C. 29201



Re: RhodesWay North
1400 Jefferies Highway
Walterboro, S.C.
Permit ID #02567

Dear Mr. Schrader:

Reference your letter, dated December 2, 2011, with respect to implementation of a Tier I Assessment at the above cited location. As directed, enclosed you will find a completed UST Owner/Operator Lead Information Sheet. Additionally, please be advised that we have previously been advised by Denise Place that this site has been qualified for SUPERB funding and have previously submitted a SUPERB Account Application form. Enclosed you will find copies of the same.

Thank you for your understanding and consideration.

Sincerely,

Robert L.A. Smith
President

Return to Arthur Shrader

UNDERGROUND STORAGE TANK (UST) OWNER/OPERATOR LEAD INFORMATION SHEET

1. CONTRACTOR OF CHOICE

As the UST Owner/Operator of the UST Permit #02567, I would like to use the contractor or person(s)* listed below and request that they represent me for:

☐ Tier I

☒ All future assessment scopes. **

Name of Contractor/Person(s) Environmental Compliance Services, Inc.

Address P.O. Box 3528

Fort Mill, S.C. 29708

Telephone Number 800-627-0493 UCC-0358 Certification #

Note: After September 20, 1997, rehabilitation activities must be performed by a SC Certified Site Rehabilitation Contractor.

*indicate if the person listed is your own employee

** if you would like the contractor to perform all future assessment activities at this and/or other UST sites that have confirmed releases, please provide a list of all sites on your letterhead and provide the information requested in items 2 and 3 below within the context of the letter.

2. FINANCIAL OR FAMILIAL RELATIONSHIP

Does a financial or familial relationship, as defined below, exist between you and the contractor/person that you listed above? _____ Yes __X__ No (please initial)

Financial Relationship: A connection or association through a material interest of sources of income which exceed five percent of annual gross income from a business entity.

Familial Relationship: A connection or association by family or relatives, in which a family member or relative has a material interest. Family or relatives include: father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, or fiancée.

3. PAYMENT

The first $25,000.00 in eligible site rehabilitation costs will be applied against the applicable SUPERB deductible, upon submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment.

For eligible costs exceeding the $25,000.00 deductible, you can pay the contractor and, upon the submittal of the canceled check (front and back) or a notarized statement from the contractor verifying payment, be compensated from the SUPERB Account, or have payment issued directly from the SUPERB Account to the contractor. (check one)

_____ For eligible costs exceeding the deductible, I request that payment be made to me after I have paid the contractor.

__X__ For eligible costs exceeding the deductible, I request that payment be made directly to the contractor.

(Note: all costs must receive prior financial approval from the Department regardless of payment option.)

Underground Storage Tank Owner/Operator Signature _____

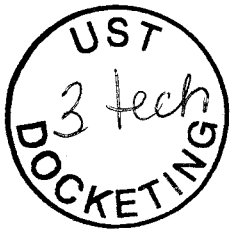
Printed Name Robert L.A. Smith

Date Signed 12-12-11

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

January 13, 2012



Mr. Arthur Shrader
South Carolina Department of Health
& Environmental Control
2600 Bull Street
Columbia, South Carolina 29201-1708

Dear Mr. Shrader:

Enclosed please find the Quality Assurance Project Plan Addendum to the SC DHEC UST Programmatic QAPP For Rhodesway North; UST Permit #02567. If you have any questions, please contact me at (704) 583-2711. Your prompt attention to this matter is greatly appreciated.

Sincerely,

Micheal Clea, MESH, MBA.
Project Manager
Environmental Compliance Services, Inc.

Enclosures

Printed on recycled, carbon neutral paper

Appendix B: Contractor Addendum

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Rhodesway North; UST Permit #02567

1400 Jefferies Highway, Walterboro, SC

Prepared by:
Micheal Clea
Environmental Compliance Services, Inc.
13504 South Point Blvd, Ste F
Charlotte, NC 28273

Date: December 27, 2011
Certified UST Site Rehabilitation Contractor #358
Environmental Compliance Services, Inc.

Approvals:

Art Shrader — Signature — Date
SC DHEC Project Manager

Micheal Clea — Signature — Date 1/11/12
Contractor Project Manager

Kurt Blevins — Signature — Date 1/11/2012
Site Rehabilitation Contractor

Craig L. Kennedy, PG — Signature — Date 1/12/2012
Project Verifier/QA Manager

for Jeff Graham — Signature — Date 12/29/2011
Laboratory Director

Larry Lewis — Signature — Date
AES Laboratory Director
Larry Lewis 2012.01.03 09:53:46 -05'00'

Joshua Slusarczyk — Signature — Date 12/29/11
Shield Engineering Lab Director

A2 Table of Contents

Table of Contents

A1 Title and Approval Page 2
A2 Table of Contents 3
A3 Distribution List 4
Table 1A Addendum Distribution List 4
A4 Project Organization 5
Definitions of Project Roles 6
A5 Problem Definition/Background 6
A6 Project/Task Description 7
A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) 8
A8 Training and Certificates 9
Table 3A Required Training and Licenses 9
A9 Documents and Records 13
Table 4A Record Identification, Storage, and Disposal 13
Section B Measurement/Data Acquisition 14
B1 Sampling Process/Experimental Design 14
Table 5A Sampling Activities 14
B2 Sampling Methods 14
Table 6A Field Corrective Action 16
B3 Sample Handling and Custody 17
B4 Analytical Methods 19
Table 7A Analytical SOPs and Referenced Methods 19
Table 8A SOP Abbreviation Key 19
Table 9A Corrective Action Procedures 21
B5 Quality Control Requirements: 22
B6 Field Instrument and Equipment Testing, Inspection and Maintenance 22
Table 11A Instrument and Equipment Maintenance 23
Table 12A Instrument and Equipment Inspection 24
B7 Instrument Calibration and Frequency 24
Table 13A Instrument Calibration Criteria and Corrective Action 25
B8 Inspection/Acceptance Requirements for Supplies and Consumables 26
Table 14A List of Consumables and Acceptance Criteria 26
B9 Data Acquisition Requirements (Non-Direct Measurements) 27
B10 Data Management 28
Section C Assessment and Oversight 30
C1 Assessment and Response Actions 30
C2 Reports to Management 30
Section D Data Validation and Usability 30
QAPP APPENDIX B ATTACHMENTS 31

A3 Distribution List

Name	Title	Organization/Address	Telephone Number	Fax Number	Email Address
Art Shrader	SC DHEC Technical Project Manager	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Kurt Blevins	Site Rehabilitation Contractor	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Micheal Clea	Contractor Project Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Jeff Graham	Laboratory Director	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Larry Lewis	Laboratory Director	Analytical Environmental Services, Inc. 3785 Presidential Pkwy Atlanta, GA 30340	770-457-8177	770-457-8188	llewis@aesatlanta.com
Craig L. Kennedy, PG	Project Verifier/QA Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com
Steve Taylor	Well Services/Driller	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853		staylor@gexnc.com
Joshua Slusarczyk	Laboratory Director	Shield Engineering, Inc. 4301 Taggart Creek Road Charlotte, NC 28208-5483	(800) 395-5220	(704) 394-6968	jslusarczyk @shieldengineering.com

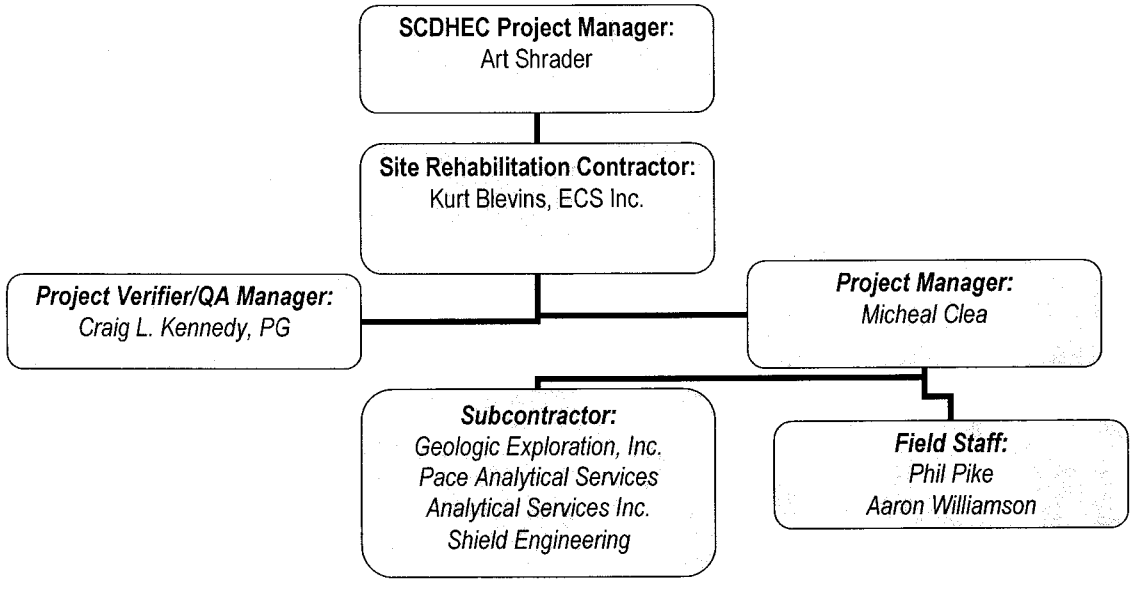
Table 1A Addendum Distribution List

A4 Project Organization

Role from the UST Master QAPP	Person in this Role for Project	Organization/Address	Telephone Number	Fax Number	Email Address
Project Manager	Art Shrader	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Site Rehabilitation Contractor	Kurt Blevins	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Contractor Project Manager	Micheal Clea	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Well Services/Driller	Steve Taylor	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853	800-752-8853	staylor@gexnc.com
Analytical Laboratory Director	Jeff Graham	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Pace Subcontractor: Analytical Laboratory Director	Larry Lewis	Analytical Environmental Services, Inc. 3785 Presidential Pkwy Atlanta, GA 30340	770-457-8177	770-457-8188	llewis@aesatlanta.com
Project Verifier/QA Manager	Craig L. Kennedy, PG	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com

Table 2A Addendum Role Identification and Contact Information

Figure 1A Organizational Chart:



Definitions of Project Roles

Site Rehabilitation Contractor

Kurt Blevins is the local Branch Manager of ECS Inc and will be responsible for overseeing adherence to the site specific QAPP during all phases of work. The Site Rehabilitation Contractor is responsible for maintaining the original, approved QAPP.

Project QA Officer

The project QA Officer (Craig L. Kennedy, PG) provides review of field work, documentation of calibration for field instruments, lab data, and technical review of reports produced utilizing this data. The QA Officer will independently review data generated from this project and determine if the data meets QA/QC criteria as set forth in the SCDHEC UST Programmatic QAPP.

Project Manager

The Project Manager (Micheal Clea) will be responsible for work conducted during this scope of work and the primary point of contact. His duties will include development of the site specific QAPP, supervising field work, documenting and QA failures, determining corrective actions to QA failures, and preparing reports for submission to SCDHEC.

Field Staff

The contractor field staff will perform sampling and field activities per the QAPP document under the direction of the Project Manager. Field staff will be responsible for collection and sampling of related data and calibration of field instruments. The Project Manager in certain situations may also be a member of the Field Staff.

A5 Problem Definition/Background

Discuss the background (as much as is known) of the site and appropriate historical information, and why this site is being assessed.

The site is located at the intersection of N. Jeffries Boulevard (US Highway 15) and Robertson Blvd. The site currently operates as a petroleum retail facility and convenience store. The site consists of an approximated 2,000 square foot building constructed prior to 1994. A 2,680 square foot canopy and a 2,380 square foot canopy were located on opposite sides of the building. According to UST Registry, a release from the UST system had not been reported for this site prior to April 2011. On 3/16/2011 ECS representatives performed a Site Check of the retail facility.

As part of the Site Check, a temporary well was advanced in grassy area located between the UST system and adjacent property (Dollar General). A petroleum odor was detected from hand augered soil cuttings between 4 ft and 9 ft. A groundwater sample was collected and delivered to a South Carolina certified analytical laboratory following standard chain of custody procedures. Analyses were performed for BTEX and naphthalene using EPA Method 8260 and PAHs by EPA Method 8270. The laboratory results indicated that groundwater concentrations of BTEX, and Naphthalene in the area near the UST basin are above the SCDHEC RBSLs. The purpose of

the Tier I investigation is to determine the risk the release may pose to human health and the environment.

Please answer the following: Does this project fall under UST or Brownfields area?

Yes, UST Area.

A6 Project/Task Description

1. ***Summarize what is known about the work to be done. This can be a short sentence indicating what the Scope of this project is (see Master QAPP Section A6).***

   A Tier I investigation shall be performed on site to determine the risk the referenced release may pose to human health and the environment. In Section B (Tier I Sampling Process Design) of Revision 1 of the *Programmatic QAPP* dated June 2011, the UST Program indicates two soil borings shall be installed in the vicinity of the UST area; five soil borings shall be installed at the piping and dispenser area; and one soil boring at least 30 feet away from UST system. Based on this information, one soil boring shall be installed at the diesel UST basin and one soil boring shall be installed at the gasoline UST basin; five soil borings shall be installed in the vicinity of the dispensers and piping; and, one soil boring will be installed at least 30 feet or more away from the UST system. No additional soil borings or additional soil boring footage will be anticipated for completion of this Tier I. Also from the Tier I Sampling Process Design, three monitoring wells shall be installed at the site. For completion of this Tier I, one well will be installed in the immediate location of the soil boring that exhibited the highest field-screening concentration.; one well will be installed in the location of the background soil boring (at least 30 feet away from UST system); and, one well will be installed in a position on the site so that the direction of groundwater flow can be determined. Additionally from the Tier I Sampling Process Design, if receptors are identified that may be impacted; they shall be immediately screened for hydrocarbons using a properly calibrated organic vapor analyzer or other similar screening device. Water samples will be obtained for all water supply wells within a 500-foot radius of the site. The required field-screening and lab data for these receptors shall be included in the Tier 1 Report. Mapped wetlands were located within 275 feet to the northeast of the site. An unnamed Tributary to Ireland Creek is also located within 300 feet to the northeast and a water tower is located within 450 feet south of site. Based on this information, Samples will be collected from these receptors.

2. ***The work will begin within Approximately One Month after cost approval and the Tier I (including report) should be complete (and submitted) within approximately 60 to 90 days (depending on due date) after cost approval receipt by ECS, Inc.***

3. ***Are there time or resource constraints? Include those factors that may interfere with the tentative schedule.***

   Potential issues may arise from inclement weather, access issues, unpredicted site or equipment problems or schedule conflicts.

A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs)

Detail the geographical area that is to be part of the project. Maps should be included to show not only the topography and the geographical area of the State, but also to show more detail of the site itself including property lines.

The site is located in the Coastal Plain region of South Carolina. According to Newcombe (1989), near surface sediments consist of Pliocene- to Holocene-age undifferentiated sand, silt and clay of alluvial origin, representing terrace deposits of relict shorelines. The study area lies within the floodplain of the Ashepoo, Combahee and Edisto Rivers. The depositional setting of the area has been termed "transitional" from the alluvial, upper deltaic plain to the northwest, to the proximal marine and marine environments to the southeast. In this portion of the Coastal Plain, surficial sediments range in thickness from less than 50 to approximately 400 feet. Underlying the surficial sediments is the Cooper Formation, an equivalent to the upper portions of the Floridan Aquifer (Ocala Limestone), which is an important source of groundwater in the eastern Coastal Plain. The limestone overlies the Black Mingo Formation, a Paleocene-age limestone mixed with sub-equal portions of sand and clay. The Black Mingo Formation is also used for public water supply wells where it is found with the Floridan equivalents. Below the Black Mingo Formation are the Cretaceous aquifers. In the study area, these units are, in ascending order, the Cape Fear Formation, the Middendorf Formation and the Black Creek Formation. All three water-bearing units are semi-confined in the region, with the Black Creek Formation being the principal groundwater source for the study area. These Cretaceous units range in thickness from 500 feet to over 1,000 feet, and lie unconformably over pre-Cretaceous crystalline bedrock.

The Pliocene- to Holocene-age undifferentiated sands, silts and clays comprise the surficial aquifer in central Colleton County. These units are minor sources of water for agricultural and residential irrigation but generally do not supply potable water for domestic use. The Black Mingo and Cooper Formations, and to a lesser extent the Cretaceous aquifers, are the main sources of drinking water for the region. Recharge of the upper water-bearing unit, the Ocala Limestone, occurs from rainfall and surface runoff in areas where it outcrops. The lower Cretaceous units are recharged in their respective outcrop areas located to the northwest. In the study area, the base of freshwater has been estimated at 2,000 feet below sea level.

See attached **Figure 1** for topographic information. A Site Plan is included as **Figure 2.**

A8 Training and Certificates

Required training and licenses:

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Project Manager	Micheal Clea	40 Hr HAZWOPER & Refresher	40 Hr: 1996 Refresher: December 2011	-	-
Project Verifier/ QA Manager	Craig L. Kennedy, PG	40 Hr HAZWOPER & Refresher	40 Hr: 1995 Refresher: February 2011	PG	2425
Field Staff	Phil Pike	40 Hr HAZWOPER & Refresher	40 Hr: 1990 Refresher: July 2011	-	-
Field Staff	Aaron Williamson	40 Hr HAZWOPER & Refresher	40 Hr: 2009 Refresher: July 2011	-	-
Pace Lab Manager	Jeff Graham	BS Chemistry	May 1984	Lab Certification	SC 9900601
Shield Engineering Lab Manager	Joshua Slusarczyk	BS Civil Engineering Technology	December 2008	Lab Certification	UCC-0019
AES Lab Manager	Larry Lewis	Lab Certification	Various dates for various Method Certifications	Lab Certification	98016003
Professional Surveyor	Jay Joshi			PLS	14811

Table 3A Required Training and Licenses

Kurt Blevins of **ECS, Inc.** is responsible for ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location: **588 Silver St, Agawam, MA**.

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Well Driller	Jonathan Burr	Continuing Ed.		Well Driller	1740
Well Driller	Vincent Federle	Continuing Ed.		Well Driller	1930
Well Driller	Mark Gettys	Continuing Ed.		Well Driller	1086
Well Driller	Nicholas Hayes	Continuing Ed.		Well Driller	1983
Well Driller	James Hess	Continuing Ed.		Well Driller	1929
Well Driller	Jason Mantak	Continuing Ed.		Well Driller	1494
Well Driller	Michael	Continuing Ed.		Well Driller	1276

Title/Job	Name	Training Required	Date training received	Type of License	License Number
	McConahey				
Well Driller	Daniel Summers	Continuing Ed.		Well Driller	1430
Well Driller	Jerry Watkins	Continuing Ed.		Well Driller	1979

Steve Taylor of **Geologic Exploration Inc.** is responsible to ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location:
176 Commerce Blvd, Statesville, NC 28625.

It is understood that training records will be produced if requested by SC DHEC.

The Following Laboratory(ies) will be used for this Project:

Commercial Lab(s)

Full Name of the Laboratory: Pace Analytical Services, Inc.-Huntersville
Name of Lab Director: Jeff Graham
SC DHEC Certification Number: 9900601
Parameters this Lab will analyze for this project:

Soil:

Benzene, toluene, ethylbenzene, and total xylenes (BTEX), Naphthalene, and methyl tertiary butyl ether (MTBE)by EPA Method 8260B with Preparation 5035;
and, Benzo(a)anthracene, benzo(b)flouranthene, benzo(k)flouranthene, chrysene, dibenz(a,h)anthracene (PAHs) by EPA Method 8270D with Preparation 3546.

Groundwater:

BTEX, total naphthalenes, 1,2-dichloroethane (1,2-DCA), and MTBE by EPA Method 8260B with Preparation 5030;
Ethylene dibromide (EDB) by EPA Method 8011; and,
PAHs by EPA Method 8270D with Preparation 3510C;

Full Name of the Laboratory: Pace Analytical Services, Inc,- Asheville
Name of Lab Director: C B Johnson
SC DHEC Certification Number: 9903001
Parameters this Lab will analyze for this project:

Soil:

Total organic carbon (TOC) by EPA Method 9060A

Groundwater:

Total & Dissolved Lead by EPA Method 6010C, 6020A, or 7010

Full Name of the Laboratory: Shield Engineering, Inc.
Name of Lab Director: Joshua Slusarczyk
SC DHEC Certification Number: UCC-0019
Parameters this Lab will analyze for this project:

Soil:

Grain Size Analysis/Hydrometer by ASTM D422

Full Name of the Laboratory: Analytical Environmental Services, Inc.
Name of Lab Director: Larry Lewis
SC DHEC Certification Number: 98016003
Parameters this Lab will analyze for this project:

Soil:

Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO) by EPA Method 8015C with Preparation 3550C

Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's SOPs as part of this QAPP.

A9 Documents and Records

Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)

X US Mail X Courier X Hand delivered

Other (please specify): Email if accepted by SCDHEC Project Manager

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Laboratory Instrument Raw Data	Target software	Electronic	To Disc –offsite storage for 5 yrs	Yes
Laboratory Final Reports	LIMS	Electronic	Tape backup – offsite storage for 5 years	Yes
Field Measurements	ECS, Inc.	Hard Copy: Field Book Electronic: PDF File	Hard Copy & PDF File: ≥5yrs	Yes
Well Construction Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Well Abandonment Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Waste Manifests	Transporter/Disposal Facility	Hard Copy & Electronic Copy	Transporter/Disposal Facility: ≥5yrs	Yes
Tier I Report	ECS, Inc.	Hard Copy & Electronic	≥5yrs	Yes

Table 4A Record Identification, Storage, and Disposal

Section B Measurement/Data Acquisition

B1 Sampling Process/Experimental Design

Item	Start Date	End Date	Comments
IGWA	-	-	Not Applicable For This Project
Tier I Assessment	Within approx. 30 Days of CA receipt	Within approx. 60 to 90 Days after receipt of CA	End Date depends on Due Date provided by SCDHEC Project Manager
Tier II Assessment	-	-	Not Applicable For This Project
AFVR	-	-	Not Applicable For This Project
MW Installation	-	-	Not Applicable For This Project
Monitoring Well Sampling Event	-	-	-

Table 5A Sampling Activities

B2 Sampling Methods

Please note: The contractor must follow sampling protocols as given in the UST QAPP.

***Estimate* the number of samples of each matrix that are expected to be collected:**

Soil — 14 (includes 8 soil borings, 3 soils during well install, and 3 for Trip, Field Blanks & Duplicate)

Ground Water from monitoring wells — 6 (includes 3 new wells, and 3 for Trip & Field Blanks and Duplicates)

From Drinking/Irrigation water wells — 1

From surface water features — 2

Total number of Water samples — 9 (includes Trip & Field Blanks and Duplicates)

The samples will be (check as many as apply): ____Homogenized ____Split

For the sample matrices indicated above, please describe how samples will be collected and the equipment needed.

Decontaminated stainless steel hand augers shall be used to collect shallow subsurface samples (≤5 feet). Typically, 4-inch auger-buckets with cutting heads are pushed and twisted into the ground, then removed as the buckets are filled. Deeper soil sampling will be accomplished using power equipment, such as a Geoprobe. The Geoprobe will utilize the Macro-Core Soil Sampler

for soil sample collection. The Macro-Core Soil Sampler includes a light-weight center rod, sample tube, liner and direct push device for collecting discrete interval samples of unconsolidated materials at depth. The liners range in length size between 36 inches, 48 inches, and 60 inches and each has an approximate 1.375-inch outside diameter.

Groundwater samples will be collected by using new disposable polyethylene bailers.

Please see attached ECS SOP 4.00 General Sampling Procedures for Aqueous & Solid Matrices.

Will Sampling Equipment have to be cleaned and decontaminated or is everything disposable?
Soil samples shall be collected and jarred while wearing nitrile gloves. Sterile soil sampling jars shall be made of glass and provided by the subcontracted laboratory.

Groundwater samples will be collected using disposable bailers. Nitrile gloves will be worn by field staff and changed between tasks and locations. The disposable sampling equipment and gloves will be disposed as solid waste at a municipal facility.

Specific Sampling Equipment Quality Assurance Techniques as detailed in Appendix H of the SCDHEC Programmatic QAPP shall be followed during all site activities.

If sampling equipment must be cleaned please give a detailed description of how this is done and the disposal of by-products from the cleaning and decontamination.
Stainless steel hand auger and Macro-Core Soil Sampler will be cleaned with tap water and soap, using a brush if necessary, to remove particulate matter and surface films. Steam cleaning (high pressure hot water with soap) may be necessary to remove matter that is difficult to remove with the brush. Augers that are steam cleaned should be placed on racks or saw horses at least two feet aboveground. Rinse thoroughly with tap water. Allow to air dry.

Groundwater water quality readings will be collected using a multi-parameter water quality meter (as discussed in Section B-6). The water quality meter and water level meter will be cleaned between sample points with a solution of alconox and deionized water and rinsed with deionized water.

Decontamination water will be containerized with purge water in properly labeled; DOT approved 55-gallon drums and disposed as non-hazardous waste at an approved facility.

Investigative Derived Wastes shall be placed in a 55 gallon drum, labeled with the proper labeling (Non-hazardous or Hazardous) following RCRA regulations and left onsite to be picked up by A&D Environmental Services.

Identify any equipment and support facilities needed. This may include such things as Fed-ex to ship the samples, a Geoprobe, field analysis done by another contractor (who must be certified), and electricity to run sampling equipment.

The following drilling equipment shall be utilize and maintained by Geologic Exploration Inc. for field screening and monitoring well installation purposes: Geoprobe 7822DT, Geoprobe 7822DT, Geoprobe 6620DT, Diedrich D-120 (truck mounted), DrillMax 2400, Mobil B-58 (truck mounted), Diedrich D-120 (atv), Drilltech D25KW.

Investigative Derived Wastes (soil & water) shall be received by A&D Environmental Services.

The samples shall be delivered to the Pace lab by the subcontracted laboratory's courier service. Subcontracted lab samples will be picked up by the subcontracted lab's courier service. ECS, Inc. is not responsible for delivery of samples between contracted laboratories.

Address the actions to be taken when problems occur in the field, and the person responsible for taking corrective action and how the corrective action will be documented.

Failure	Response	Documentation	Individual Responsible
Drilling Equipment failure	Contact Steve Taylor	Note problem schedule date to remobilize to site.	Drilling supervisor
Horiba Water Quality Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff
Purge Pump Failure	Use Hand bailing Method	Sampling sheet & Report	Field Staff
Water Level Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff

Table 6A Field Corrective Action

B3 Sample Handling and Custody

1. How will the samples get from the Site to the Lab to ensure holding requirements are met?

Samples shall be submitted to the lab from the site by the following procedures:

1) Samples shall be brought back to the office and kept cold in a sample storage refrigerator until they are picked up within the following business day by the laboratory's courier service.

Chain of Custody procedures shall be properly followed for each delivery scenario.

2. How will the contactors cool the samples and keep the samples cool?

Samples shall be stored in a secured, thermally insulated container with ice until transferred to a dedicated and secured sample storage refrigerator. Each cooler will contain sufficient ice to ensure that a 4°C temperature is maintained and will be packed in a manner to prevent damage to the sample containers. The grain size/hydrometer soil sample collected in the field will not be separated from other soil samples collected for lab analysis until container reaches laboratory.

3. How will the lab determine the temperature of the samples upon receipt? Will they be using a temperature blank?

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. The laboratory personnel will open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottles using the infrared (IR) thermometer gun.

4. ***Where will the samples be stored in the Lab once they are received?***

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. Once logged in and labeled, samples are place in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below.

Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved with a stir bar, or deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.

Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:

The 5g aliquot is preserved with a stir bar, 5mL of deionized water and a stir bar, or 5mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or

Within 48 hours of collection in the field, the 5g aliquot must be immediately extracted with 5mL of methanol and stored in a segregated volatiles cooler until analysis, or

Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Mercury or Hexavalent Chromium analysis is needed. If Mercury or Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler. Samples requiring low level mercury analysis by Method 1631 are taken to the clean room for preservation and ambient storage.

5. Describe the chain of custody procedure and attach a copy of each chain of custody that will be used. If a Chain of Custody SOP exists from the Lab and the Contractor is willing to adhere to it, then this may be attached.

Laboratory Chain of Custody procedures are outlined in the most recent revision of SOP S-CAR-C-001, Sample Management.

A Chain of Custody shall be completed according to the attached Instructions for Completing a CoC. Samples shall be disposed of using proper procedures by laboratory personnel. ECS, Inc. is not responsible for laboratory sample disposal.

Soil disposal by laboratories: All soils are disposed at an off-site landfill. Soils that are contaminated are placed in a 230 degree Fahrenheit oven for 16 hours then are disposed of in the area where they were collected from.

See attached laboratory Chain of Custodies.

B4 Analytical Methods

1. ***Identify the SOPs which will be used to analyze the samples, the method which the SOP references and the equipment or instrumentation that is needed:***

Parameter	SOP ID*	Method Referenced	Equipment	Comments
8260	S-CAR-0-023	8260B	Purge and Trap Mass Spectrometer System	
8011	S-CAR-O-020	8011	GC ECD	
8270	S-CAR-O-015	8270D	Direct Inject Mass Spectrometer System	
8270 SIM PAH	S-CAR-O-052	8270D	Direct Inject Mass Spectrometer System	
Lead	S-ASV-I-043	EPA 6010C	ICP Varian ICP Thermo Elemental	
TPH-DRO	sub			
TOC	sub			
Grain Size	S-5	ASTM D422	Sieves Oven Scale	
Hydrometer	S-6	ASTM D422	Sieves Oven Scale 1000mL Cylinder Hydrometer Thermometer	

Table 7A Analytical SOPs and Referenced Methods

- **This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

Abbreviation	Lab Identification of this SOP	Full Name of the SOP
S-CAR-O-023	S-CAR-O-023-rev.08	Determination of Volatile Organic Compounds by GC/MS
S-CAR-O-020	S-CAR-O-020-rev.05	Determination of EDB, DBCP and TCP in Water by Microextraction
S-CAR-O-015	S-CAR-O-015-rev.05	Determination of Semi-Volatile Organic Compounds in Aqueous, Solid or Waste Samples by GC/MS
S-CAR-O-052	S-CAR-O-052-rev.2	Determination of Semivolatile Organics by GC/MS-SIM, Selective Ion Monitoring
S-ASV-I-043	S-ASV-I-043-Rev.02	DETERMINATION OF METALS BY INDUCTIVELY COUPLED PLASMA (ICP) SPECTROSCOPY BY SW-846 6010C
S-ASV-I-58	S-ASV-I-58-Rev.00	Ion Chromatography
S-ASV-I-021	S-ASV-I-021-Rev.01	The Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry
S-ASV-M-020	S-ASV-M-020-Rev.03	Mercury by Cold Vapor for Waters and Solids
S-5	Grain Size	S-5 Grain Size ASTM D422
S-6	Hydrometer	S-5 Hydrometer ASTM D422

Table 8A SOP Abbreviation Key

2. Identify procedures to follow when failures occur, identify the individual responsible for corrective action and appropriate documentation:

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Equipment check	Equipment failure	Contact Steve Taylor	Note problem, schedule date to remobilize to site.	Drilling supervisor
Method Blank, one per batch of 20 samples	If hits in Method Blank	Samples with hits above reporting limit are reextracted or reanalyzed. Samples with hits less than reporting limit are reported and the method blank is qualified. Samples with hits more than 10x the hit in the MB maybe footnoted with a B-flag	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Method Blank, one per batch of 20 samples	If Surrogates outside of control limits	All samples reextracted or reanalyzed if surrogate recovery is below control limits. Samples are reported and MB is footnoted if surrogate recovery is above control limits	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedances.	If LCS analyte recoveries are above control limits, samples with a hit for the failing analyte above the reporting limit are reextracted or analyzed. If LCS analyte recoveries are below control limits, all samples are reextracted or reanalyzed. If LCS analyte recoveries are above control limits, samples without a hit for the failing analyte above the reporting limit are footnoted and reported. Samples may be reported if there is an acceptable matrix spike (where allowable) or laboratory control sample duplicate associated and the LCS is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	If RPD outside control limits	Samples are reported and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Corrective actions are the same as Laboratory Control Sample. Samples are reported if LCS is acceptable and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Matrix Spike, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	RPD outside control limits	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Surrogates, all samples	If Surrogates outside control limits	If surrogate recovery is high and samples are non-detected samples are reported with qualification. If surrogate recoveries are low samples are re-extracted or reanalyzed.	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
All Samples	Lost Samples	SCDHEC will be notified and samples will need to be collected again for each lost sample.	Tier I report	ECS Project Manager
All Samples	Samples out of Hold Time	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager
All Samples	Broken vials or air bubbles in vials	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager

Table 9A Corrective Action Procedures

3. Identify sample disposal procedures.

Analysis	Matrix	Schedule for disposal	Method for disposal	Comments
-	Decon water	As generated	55 gal drum onsite	See B2 Discussion
-	Soil	As generated	55 gal drum onsite	See B2 Discussion
All	Soil and Water	Monthly	Veolia Technical Solutions	All laboratory samples are disposed according to S-CHR-S-002, Waste Handling and Management

4. Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).

Not Applicable

B5 Quality Control Requirements:

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP.

B6 Field Instrument and Equipment Testing, Inspection and Maintenance

1. Identify all fields and laboratory equipment needing periodic maintenance, the schedule for this, and the person responsible. Note the availability and location of spare parts.

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
In-Field PID Instrument	MiniRae 2000 PGM 7600	As recommended in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
In-Field Groundwater Quality Instrument	Horiba Y2FAH6H3	As recommended in attached Horiba W-22XD.23XD Operation Manual pp 28-32	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Volatiles Mass Spec	ALL	Change traps, clean ion source, replace filaments	Periodic	Laboratory	MSV Analyst
Semivolatile Mass Specc	ALL	Injection port maintenance, ion source maintenance, column replacement	Periocid	Laboratory	MSSV Analyst
Groundwater Level Indicator	Heron WLI 11614	As recommended in attached Heron Instrument O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Interface Probe	1220056491	As recommended in attached Heron Interface O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
ECD GC	ALL	Injection port maintenance, column replacement	Periodic	Laboratory	GC Analyst
MetrohmIC	ALL	Replace autosampler filter, tubing, line filter, sample Line and Waste Line, as needed. Clean Pump roller, Check Reagent levels, flow rate, waste line.	Periodic	Laboratory	IC Analyst
ICP	ALL	Clean Sample introduction system , autosampler, torch,	Periodic	Laboratory	ICP Analyst

		Change spray chamber, torch tubing, tubing			
Cetac Mercury Analyzer	ALL	Clean GLS, Change Pump tubing, Nafion Dryer, Lamp	Periodic	Laboratory	Mercury Analyst
Flow Injection Analysis – Lachat 8000	ALL	Clean Rods, Injection Valves, Manifolds, Replace tubing, lamps, other as needed	Periodic	Laboratory	Nitrate Analyst

Table 11A Instrument and Equipment Maintenance

2. Identify the testing criteria for each lab or field instrument that is used to ensure the equipment is performing properly. Indicate how deficiencies, if found, will be resolved, re-inspections performed, and effectiveness of corrective action determined and documented. Give the person responsible for this.

Instrument/Equipment & Serial Number	Type of Inspection	Requirement	Individual Responsible	Resolution of Deficiencies
In-Field PID Instrument MiniRae 2000 PGM 7600	Daily prior to use	Calibration as discussed in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
In-Field Groundwater Quality Instrument Horiba Y2FAH6H3	Daily prior to use	Calibration as discussed attached in Horiba W-22XD.23XD Operation Manual pp 28-32	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Groundwater Level Indicator Heron WLI 11614	Daily prior to use	Calibration as discussed in attached Heron Instrument O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Interface Probe Heron 1220056491	Daily prior to use	Calibration as discussed in attached Heron Interface O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Volatiles Mass Spec	Daily calibration check	Method Requirements	MSV Analyst	Recalibration or instrument maintenance
Semi volatiles Mass Spec	Daily calibration check	Method Requirements	MSSV Analyst	Recalibration or instrument maintenance
ECD GC	Daily calibration check	Method Requirements	GC Analyst	Recalibration or instrument maintenance
Metrohm IC	Daily calibration check	Method Requirements	Nitrate Analyst	Recalibration or instrument maintenance
ICP	Daily calibration check	Method Requirements	ICP Analyst	Recalibration or instrument

				maintenance
Cetac Mercury Analyzer	Daily calibration check	Method Requirements	Mercury Analyst	Recalibration or instrument maintenance
Flow Injection Analysis – Lachat 8000	Daily calibration check Method Requirements	Method Requirements	IC Analyst	Recalibration or instrument maintenance

Table 12A Instrument and Equipment Inspection

B7 Instrument Calibration and Frequency

1. Identify equipment, tools, and instruments for field or lab work that should be calibrated and the frequency.
2. Describe how the calibrations should be performed and documented, indicating test criteria and standards or certified equipment.
3. Identify how deficiencies should be resolved and documented. Identify the person responsible for corrective action.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
In-Field PID/FID Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10
In-Field Groundwater Quality Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	Horiba W-22XD.23XD Operation Manual pp 28-32
Groundwater Level Indicator	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Instrument O&M Manual
Interface Probe	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Interface O&M Manual
Volatiles Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSV Analyst	S-CAR-0-023

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
Semi volatile Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSSV Analyst	S-CAR-O-015 S-CAR-O-052
GC ECD	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	GC Analyst	S-CAR-O-020
Metrohm IC	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	IC Analyst	S-ASV-058
ICP	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	ICP Analyst	S-ASV-043
Cetac Mercury Analyzer	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Mercury Analyst	S-ASV-M-020
Lacaht QuickChem 8000	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Nitrate Analyst	S-ASV-I-021
Sieve	S-5	6 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Grain Size
Ovens	S-4	4 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Ovens
Scales	S-17	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Electronic Scales
Hydrometer	S-6	24 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Hydrometer
Hydrometer Solution	S-7	monthly	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Sodium Hexametaphosphate
Thermometer	S-21	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Digital Thermomters

Table 13A Instrument Calibration Criteria and Corrective Action

*** This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B8 Inspection/Acceptance Requirements for Supplies and Consumables

1. Identify critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials.
2. Identify the individual(s) responsible for this.

Item	Vendor	Acceptance criteria	Handling/Storage Conditions	Person responsible for inspection and tracking.
Span gas for PID	Liquid Technology Corp.	Attached pressure gauge reads what sticker on span gas can details.	Cool dry cabinet	Phil Pike Aaron Williamson
Leather Gloves	Home Depot	New & Undamaged	Cool dry cabinet	Phil Pike Aaron Williamson
Nitrile Gloves	Enviro-Equipment	New & Undamaged	Sealed boxes	Phil Pike Aaron Williamson
Laboratory Chemicals	Fisher,VWR,	Certificates of analysis and laboratory testing	Laboratory storage	Receiving and laboratory personnel
Laboratory standards	O2Si, Restek, Fisher, VWR, Inorganic Ventures, CPI	Certificates of analysis and laboratory verifications	Vendor specific storage conditions	Laboratory Analysts
Sample Containers	Daniels Scientific, Fisher, O2Si	Certificates of analysis and laboratory testing	Bottle storage area	Sample receiving personnel
Disposable Bailers	GeoTech	New & Undamaged	Individually wrapped in sterile plastic	Phil Pike Aaron Williamson
Twine	Home Depot	Sealed in plastic	Sealed in plastic and isolated from contaminant sources	Phil Pike Aaron Williamson

Table 14A List of Consumables and Acceptance Criteria

B9 Data Acquisition Requirements (Non-Direct Measurements)

1. Identify data sources, for example, computer databases or literature files, or models that should be accessed or used.
2. Describe the intended use of this information and the rationale for their selection, i.e., its relevance to project.
3. Indicate the acceptance criteria for these data sources and/or models.

Data Source	Used for	Justification for use in this project	Comments
Previously Submitted UST Closure Report, Tax Map, Topographic Maps	Historic GW depth/GW Quality & values	Establishes the DTW; Establishes materials needed.	Documents provided by SCDHEC will be considered an acceptable data source.
-	-	-	-
-	-	-	-

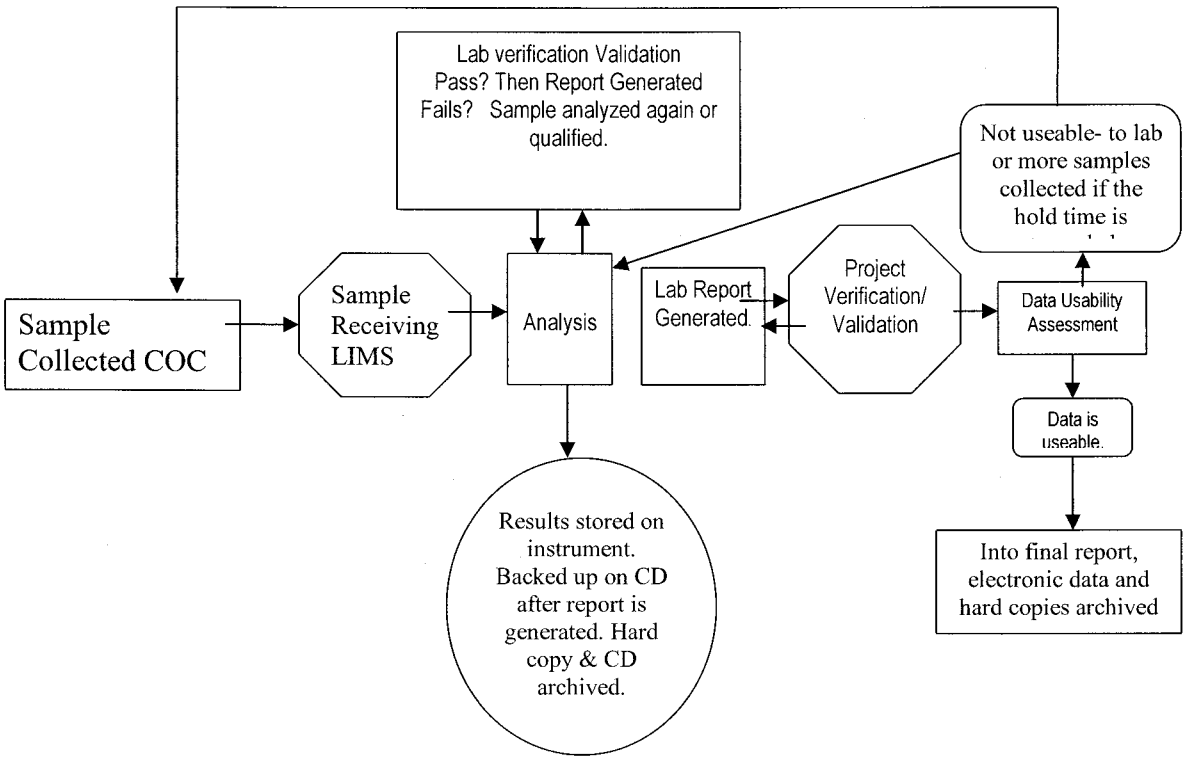
Table 15A Non-Direct Measurements

4. Identify key resources/support facilities needed.

Samples shall be picked up at ECS, Inc. and transported to the laboratory by the subcontracted laboratory's courier service. No additional support facilities will be anticipated for this scope of work.

B10 Data Management

1. Describe the data management scheme from field to final use and storage.



2. How does the lab and field staff ensure that no unauthorized changes are made to the chain of custody, sampling notebooks, laboratory notebooks and computer records?

The laboratory maintains comprehensive Quality Control and Training Programs. All sample receipt data, sample log-in and analytical data is peer reviewed, including review for inappropriate changes. Data management, review procedures and the Quality Systems Program are documented in the laboratory's Quality Manual and Standard Operating Procedures. The Quality Management Department oversees adherence to and review of these programs.

Field notes are recorded in bound, water resistant log books using indelible ink. Pages are dated at the start of the field day, and the name or initials of the field staff, weather, and required activities for the day are recorded. Chain-of-custody documentation information is recorded on field sheets which accompany samples to the lab. Data collected in the field is also entered into a limited access database.

Project related computer files are stored on a restricted access network server. Information is backed-up daily. Logbooks are scanned into the network server.

3. How does the lab ensure that there are no errors in samples records including times when sample information is compiled, data calculated and/or transmitted?

Sample data acquisition software included audit trails which are reviewed periodically under the Laboratory's Quality Systems Program. Laboratory data systems are backed up daily and able to be restored in the event of a system failure. These procedures are documented in laboratory SOPs S-ALL-IT-001, System Security and Integrity and S-ALL-IT-002, Server Backup. The IT System Manager is responsible for these systems and procedures.

4. How will the data be archived once the report is produced? How can it be retrieved? (This applies to both electronic and hard copies).

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Hard copies will remain in the office for a minimum of 5 years. The electronic copies will be maintained for a minimum 5 years.

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Section C Assessment and Oversight

C1 Assessment and Response Actions

1. *The Contractor is supposed to observe field personnel daily during sampling activities to ensure samples are collected and handled properly and report problems to DHEC within 24 hours. Please state who is responsible for doing this and what observations will be made. Will this person have the authority to stop work if severe problems are seen?*

The Contractor Project Manager will supervise field personnel during sampling activities to ensure samples are collected according to the requirements of the QAPP. The Contractor Project Manager shall provide oversight and will have the authority to stop work when necessary.

2. *The SCDHEC UST QAPP states that the Lab will receive an Offsite Technical System Audit. For this project, what assessments will be done on the Commercial Lab(s) that are being used—other than their certification audit? When or how often are these done? Who will the results be given to and who has the ability to stop work if problems are severe?*

Contractor may request an Independent Audit based on document review or complaints.

The laboratory participates in annual Proficiency Testing through an approved vendor, Environmental Resources Associates. Proficiency Testing results are provided to the Office of Environmental Laboratory Certification. Each laboratory will notify ECS, Inc. of any problems and if the previous data is suspect.

The ECS, Inc. project manager will have the authority to stop work when necessary.

C2 Reports to Management

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

Section D Data Validation and Usability

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

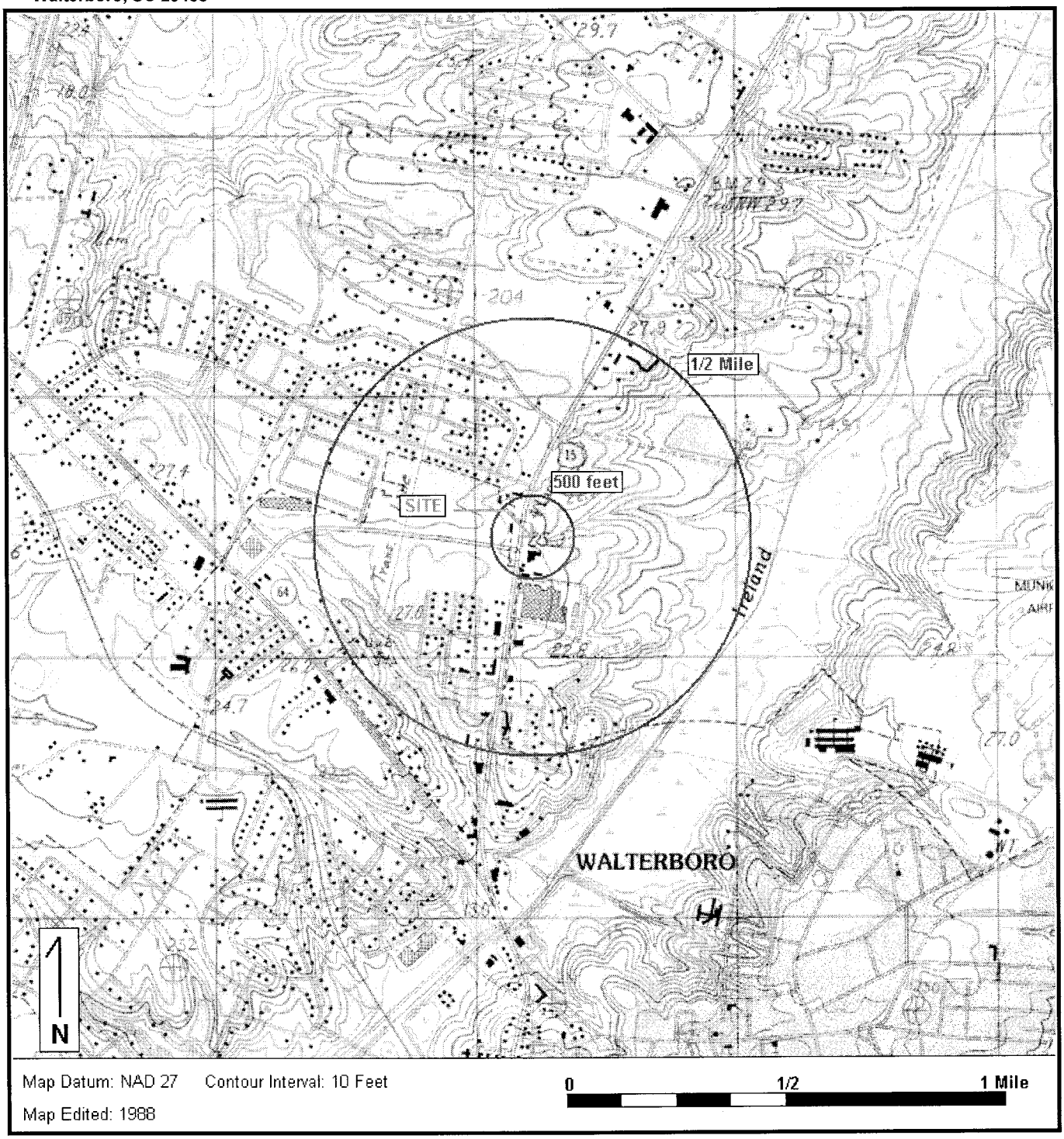
QAPP APPENDIX B ATTACHMENTS

O&M Manuals, SOPs, & Laboratory Chain of Custodies

Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins

Legend

Approximate Property Line

147-15-00-057.000 Tax Parcel Number

General Notes:

All locations, dimensions and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Reference: Colleton County GIS.

ecs
WHERE BUSINESS AND THE ENVIRONMENT CONVERGE
13504 SOUTH POINT BLVD. UNIT F
CHARLOTTE, NORTH CAROLINA 28273
TEL. (704)583-2711 FAX (704)583-2744

PROJECT: Rhodesway North
1400 N. Jeffries Highway
Walterboro, South Carolina

TITLE: Site Plan

CLIENT: Rhodes Oil Company, Inc.

GRAPHIC SCALE: 30 15 0 15 30

COMPUTER CADFILE: C:\My Documents\Charlotte\

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
RH	RH	RH	CK
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1"=30'	4/1/11	14-215778	2

Contact Heron Instruments Inc.

T 1-800-331-2032
905-634-4449

F 905-634-9657

E info@heroninstruments.com

www.heroninstruments.com

Heron also carries:

- dipper-log groundwater dataloggers
- H.OIL Interface Meters
- Sm.OIL Interface Meters

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Groundwater Monitoring
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Warranty

Heron Instruments Inc warrants to repair or replace any such defective equipment or part (determined to our satisfaction to have a defect in workmanship or original material) upon receipt and inspection of such defective equipment to Heron Instruments Inc. with all shipping pre paid by the user.

In no event shall Heron be liable for any direct, indirect or consequential damages, abuse, acts of third parties (rental equipment) environmental conditions or other expenses which may arise in connection with such defective equipment. This warranty shall not apply to damage of equipment caused by incorrect installation, usage, storage alteration or inadequate care.

Heron Warranty coverage does not extend to the following:

- Tape, bag or batteries used with the product.
- Products used as rental equipment.
- Products contaminated by materials which are hazardous and as such have rendered the unit unserviceable as outlined in the maintenance guide and warranty manual.
- Parts failure due to neglect in cleaning or servicing.
- Failure of parts caused by misuse or inappropriate use.

All probe tips (excluding dipper-T 5/8 probe tip) warranted for 1 year.

When returning a product under warranty, please review service options available or advise Heron Instruments in advance, by telephone at 1-800-331-2032 or 905-634-4449; by fax at 905-634-9657 or by e-mail at info@heroninstruments.com

Accurate. Efficient.

On the job!

Groundwater monitoring instruments

Operating/Maintenance Instructions & Warranty for

dipper-T, little dipper, SKINNY DIPPER, WATER TAPE & potable water meter

Water Level Meters

HERON INSTRUMENTS INC.
Groundwater Monitoring
Your obvious choice

General

Avoid sharp edged casing

Avoid entanglement with other equipment in boreholes and wells.

Do not use to plumb borehole depths

Do not use as guide to backfilling with sand etc. Instrument may get locked in sand.

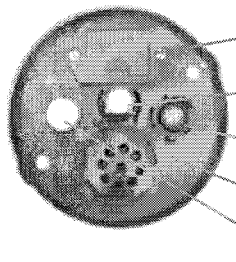
Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

Maintenance continued inside

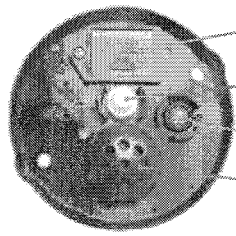
Water Level Meter Instructions

dipper-T, little dipper, potable water meter, SKINNY DIPPER

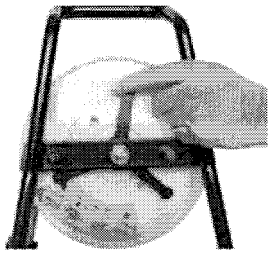


IMPORTANT
This is not an ON/OFF switch

WATER TAPE

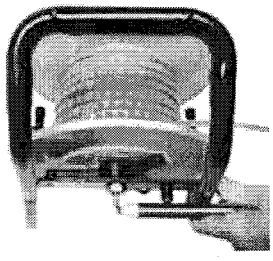


NOTE: WATER TAPE does not have a sensitivity control.



Reel Lock

To unlock the reel turn the plastic lock handle in the direction shown until it touches the frame.



To Test Entire System

Hold the centre pin on the probe against the stud on the back of the axle at the same time touch the probe body against the screw on the frame. The buzzer will sound if the system is ok. **Make sure unit is on.**

Equipment Check

1 Test circuit and battery by pressing the **white** button. Make sure the panel securing knobs are tight. If the unit does not sound, replace the battery (one 9 volt) in the drawer on the faceplate and repeat.

2 Test tape and probe by shorting out the centre conductor and probe body on the stud on the back axle of the unit as shown. The buzzer and light should activate; if not, adjust the sensitivity and repeat. **Make sure unit is on.**

3 Test the unit in tap water before going out to the field. **DO NOT** use distilled or deionized water.

Use in the Field - Important*

1 Reel the tape down the well carefully, avoiding the edge of the casing. Hang the unit on the casing where possible and run the tape over the tape guide on the frame leg to avoid cuts and nicks.

2 When the unit sounds, carefully measure the depth to water from your reference point by slowly lowering and raising the probe to the air/water interface. Raise the probe, shake off the water and repeat the measurement. In wells with cascading water, reduce the sensitivity by turning the Sensitivity Knob anti-clockwise.

3 The dipper-T, little dipper and WATER TAPE probes are rated to full depth and can be used to measure depth to bottom of well. Reel the tape until the probe touches bottom and the tape becomes slack. **DO NOT** let the probe fall under gravity or it will be damaged when it hits the bottom of the well. **DO NOT** use the unit to measure sand backfill as the tape and probe may get "locked" in the backfill.

4 Wind the tape back onto the reel, removing any excess moisture and dirt.

Cleaning the Meters

1 Always the clean the meters after use in the field to maintain optimal performance and extend the life of the unit.

2 Unwind the tape and probe and wash with a mild detergent. Rinse well, wipe and rewind onto the reel. The tape and probe can be cleaned and degreased with the following: soap solution, naptha alcanox 10%, Joy detergent 10%, Lestoil; methyl, isopropyl and isobutyl alcohols; hexane, heptane and fully halogenated freon. Rinse thoroughly with water afterwards.

3 Wash reel if necessary. The central electronic panel can be removed and the reel washed down. Unthread the panel securing knobs and carefully pull out the central panel. Disconnect the panel from the tape. The reel may be cleaned with the following: soap solution, naptha alcanox 10%, Fantastic, Windex, Joy, Top Job, Mr. Clean, Formula 409; hexane, heptane, white kerosene, mineral spirits; methyl, isopropyl, isobutyl and 1 + 3 denatured alcohols; freons TF + TE. Rinse well with water and let dry before putting the panel back in. DO NOT use abrasives, partially halogenated hydrocarbons or ketones to clean the reel.

Trouble Shooting

No Sound when the unit is tested

1 Check battery by pressing the **white** button. Replace battery if low and make sure panel securing knobs are tight. If unit still does not sound, remove central panel and check all connections.

2 Check probe conductor to make sure it is clean and not crusted with mineral deposits. Check tape/probe connection for any breaks.

Continuous Sound when the unit is turned on or probe removed from water.

1 Make sure probe conductor tip is clean.

2 Check for excess moisture on the back of the electronic panel.

3 Check probe/tape connection and tape for any breaks or leaks where water might get in.

General

- Avoid sharp edged casing
- Avoid entanglement with other equipment in boreholes and wells.
- Do not use as guide to backfilling with sand etc., Instrument may get locked in sand.
- Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

***Important: Ensure that the Panel Securing Nuts are tight before use.**

MULTI-PROBE

W-20XD Series

W-22XD.23XD

Operation Manual

■

HORIBA

3.2.2 AUTO calibration method

To obtain correct measurement, it is necessary to calibrate the sensor using the standard solution before performing measurement. Previous calibration records shown in calibration data. See page 47 "Calling up The calibration data"

Note

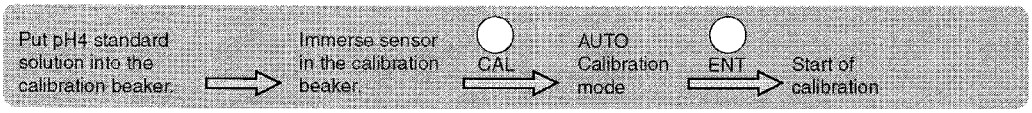
- In the AUTO calibration mode, the pH and COND sensors are calibrated with pH4 standard solution, and the DO and DEP sensors in the atmosphere simultaneously.
  Calibration contents at 25 °C are as follows:
  pH: Calibrate at 4.01 (zero calibration) and the Span is the adjustment value at the factory.
  COND: 0.449 S/m (Span calibration), the Zero is the adjustment value at the factory.
  TURB: 0 NTU (zero calibration), the Span is the adjustment value at the factory.
  DO: 8.52 mg/L (Span calibration), the Zero is the adjustment value at the factory.
  DEP: 0 m (Zero calibration), the Span is the adjustment value at the factory.

Auto-Cal Explanations

When "Auto-Cal" function is used with no calibration record, it will make one point calibration with the value seen below. We recommend to use this function, when no calibration record exists or the calibration is lost, and you're in need for quick & fast calibration
When "Auto-Cal" function is used after manual two-point calibration, please be reminded of the description below. We recommend not to use "Auto-Cal" function when manual two-point calibration is performed already.

	Auto Cal Value	What happens when "Auto Cal" is performed after manual two point calibration	Recommendation
pH	4.01 pH	When "Auto Cal" is performed after two point manual calibration (manual zero calibration and span calibration): 1) The manual zero calibration value will be over written. 2) The slope of the calibration curve calculated by manual calibration will remain unchanged.	
Conductivity	0.449 S/m	"Auto Cal" will over write the mid-range span value (0.090~0.999 S/m) with 0.449 S/m. The span value of the lowest / highest ranges will also be automatically calculated and over-written by mid-range span value. The manual zero calibration value will remain unchanged.	In order to obtain a high accuracy in calibration, we recommend using the standard solution for each range.
Turbidity	0 NTU	The manual zero calibration value will be over-written by "Auto Cal". The manual span calibration value will remain unchanged.	For both manual and "Auto-Cal", make sure the container for the standards is clean and have no contamination. When the standard is contaminated, it will affect the lower turbidity value.
DO	8.52 mg/L	The manual span calibration value will be over-written by "Auto Cal". The manual zero calibration value will remain unchanged.	
Depth	0 m	The 0m amount will be replaced by "Auto Cal" .	

- Values may be unstable if there is temperature fluctuation. Calibrate after waiting for about an hour.

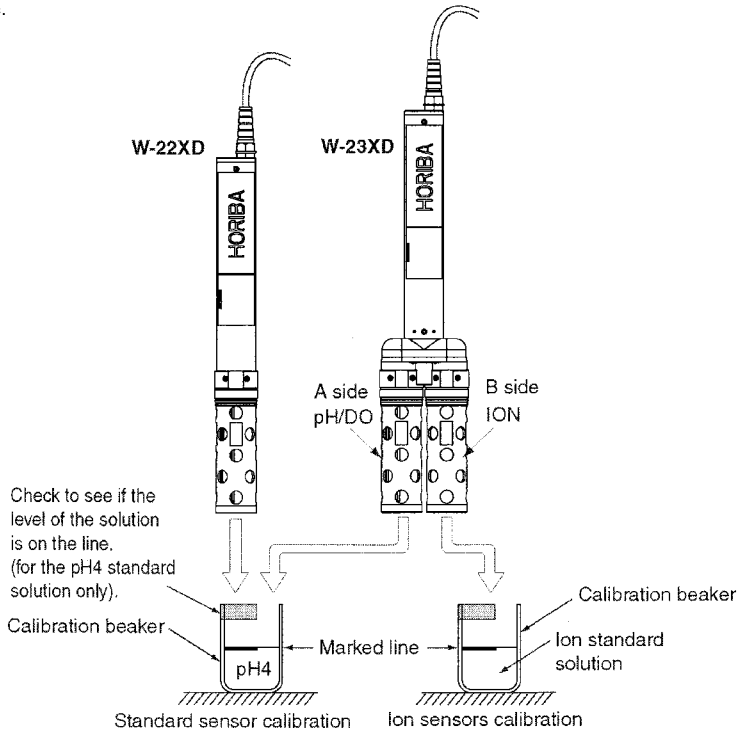


Calibrate with the following procedure.

1. Wash the sensor with distilled water a few times and put the pH4 standard solution into the calibration beaker to the marked line. Then immerse the sensor in it.
For the W-23XD model, immerse the sensor A side.

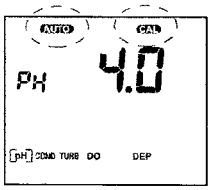
Important

- According to the label indication on the calibration beaker, check to see if the level of the calibration solution is on the label line.



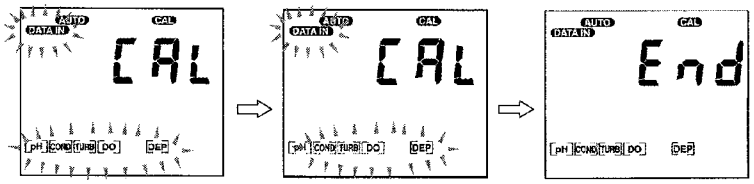
2. Press the **CAL** key, when one of pH, COND, TURB, DO or DEP is selected.

AUTO and **CAL** appear and the control unit enters the AUTO Calibration mode.



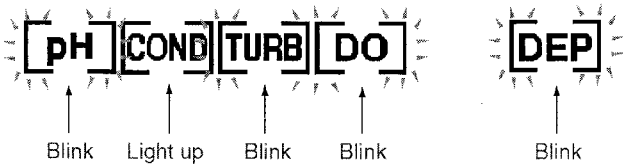
3. Press the **ENT** key to start AUTO Calibration.

Upon completion of all of the pH, COND, TURB, DO, and DEP, End will be displayed.
During calibration, **DATA IN** and [ ] for the selected measurement parameter blink. [ ] light up for the parameter of which calibration is finished.



When DATA IN is blinking
To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

Example: When COND calibration is finished:
[ ] for [COND] stops blinking is lit



Note

- For any parameter in which the calibration error has happend, calibration can not be performed, and [ ] indication keeps blinking. If two or more errors happen, an error with a smaller error number appears. (See pages 98 to 100 for these errors and troubleshooting.)
  These calibration errors disappear when the sensor is calibrated properly again, or when the control unit is turned ON again.
- Calibration is performed simultaneous and independently for all these parameters until each reading becomes stable, but the maximam duration allowed is three minutes. If the reading can not become stable within three minutes, the calibration terminates and calibration error is given to the correspondent parametre(s).

4. Press the **MEAS** key to return to the Measurement mode.

Important

- Neutralize pH 4 standard solution before disposal.

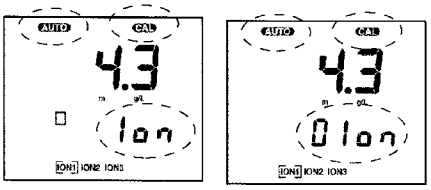
AUTO calibration of the ion sensors (W-23XD model only)

AUTO calibration is possible only for the combination of Cl^-, NO_3^-, Ca^{2+}.
For other ion sensors, the manual calibration is required after setting ion valence described on page 82.
Span calibration value preset for auto calibration corresponds to the concentration of standard solution provided as an accessory or 10 times diluted value of the standard solution.

Important

- Ion sensors take time to give stable indications. Therefore, immerse the ion sensors in standard solution for approximately one hour prior to the calibration. Then calibrate the ion sensors and perfom measurements.

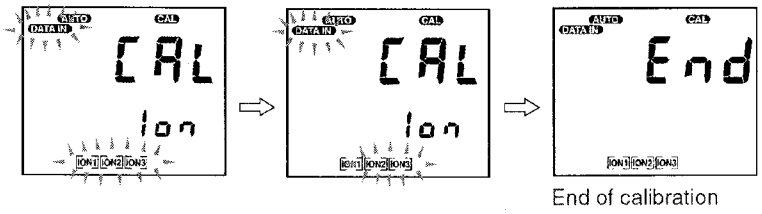
1. Wash the sensor with distilled water a few times. Put the supplied ion standard solution (#130) into the calibration beaker to the marked line. Then immerse the B side of the sensor in it.
2. Enter ion measurement mode at one of ion 1, ion 2 or ion 3.
3. Press the **CAL** key.
   AUTO, CAL, and "Ion" appear. The control unit then enters the AUTO Calibration mode.
4. Press the **SET** key.



When "Ion" is diplayed:
When 35.5 mg/L, 31.0 mg/L, or 20.1 mg/L is displayed, use these values for span calibration 1 "For Chloride, Nitrate and Calcium ion sensors".

When "0 Ion" is displayed:
When 3.55 mg/L, 3.10 mg/L, or 2.01 mg/L is displayed, use these values for dencity by 1/10 of span calibration 2 "For Chloride, Nitrate and Calcium ion sensors".

5. Press the **ENT** key to start AUTO calibration.
   Upon completion of the AUTO calibration of all the ion sensors ION1, ION2, and ION3, End will be displayed.



End of calibration

When DATA IN is blinking
To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

6. Press the **MEAS** key to return to the Measurement mode.

7.2 Troubleshooting

The instrument has a simple error message that informs users of operational errors and failure. Err No. is displayed at the bottom of the screen.

● Error message list

Err No.	Designation	Err No.	Designation
1	Sensor memory failure	6	Span calibration error
2	Sensor battery voltage drop	7	Calibration stability error
3	Instrument battery voltage drop	8	Printer error
4	Communications error	9	DATA IN error
5	Zero calibration error		

● Error and remedy

Important

- For err Nos. 5 to 7, the calibration err display disappears when a proper calibration is performed after the following action, or when the instrument is turned on again. For the other err Nos., the err display disappears after any of the following actions is taken.
- Error Nos. 2 and 3 are displayed even when using the AC adapter if the sensor probe battery voltage or instrument battery voltage drops is low on voltage.

Err NO.	Problem	Cause	Remedy
1	No data can be read from or written into the sensor probe memory.	Internal IC failure	Call your nearest store for sensor probe repair.
2	Sensor probe battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the sensor probe battery. ② Set the batteries (LR03) in the correct direction.
3	Instrument battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the instrument battery. ② Set the battery (6LR61) in the correct direction.
4	No communications possible between the instrument and the sensor probe	① Improper connection of the connector to the instrument ② Cable disconnection	① Connect the connector to the instrument properly and turn on the instrument again. ② Call your nearest store for cable repair.
5	No zero calibration possible	pH • The standard solution is contaminated. • Contamination on the pH glass membrane • Change in concentration of the internal solution for the reference electrode • Cracks in the pH glass electrode COND • The standard solution is contaminated. • The sensor is dirty. • The COND sensor is broken.	pH • Change the standard solution. • Clean the pH glass membrane. • Replace the internal solution for the reference electrode. • Replace the sensor. COND • Change the standard solution. • Clean the sensor. • Contact your nearest store.

Err NO.	Problem	Cause	Remedy
5	Zero calibration not possible	TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		DO	DO
		• Damage to the diaphragm of the DO sensor	• Check the sensor and replace it if damaged.
		DEP	IDEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
6	Span calibration not possible	pH	pH
		• Contamination on the pH glass membrane	• Clean the pH glass membrane.
		• Change in concentration of the internal solution for the reference electrode	• Replace the internal solution for the reference electrode.
		• Cracks in the pH glass electrode	• Replace the sensor.
		COND	COND
		• The standard solution isn't correct.	• Calibrate with correct standard solution.
		• The standard solution value is set uncorrectly.	• Delete the calibration data for the conductivity, then calibrate the sensor again. (☞ Page 51)
		• The COND sensor is broken.	• Contact your nearest store.
		TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		• The lid is attached uncorrectly.	• Confirm if the lid is attached correctly, then calibrate the sensor again. (☞ Page 30)
		DO	DO
		• Damage to DO sensor diaphragm	• Check the DO sensor and replace it if damaged.
		• DO sensor is unstable.	• Connect DO sensor to the sensor probe. Calibrate the sensor again 1 day later.
		DEP	DEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
		TEMP	
		• Damage to the TEMP sensor	• Contact your nearest store.
7	The calibration value does not become stable within approximately three minutes.	① Sensor contamination	① Clean each sensor.
		② Dry sensor surface	② Pour the standard solution into the calibration beaker. Calibrate the sensor again 1 to 2 hours later.
		③ Severe temperature change	③ Calibrate the sensor in a place at a stable temperature or in a thermostatic oven.

Err NO.	Problem	Cause	Remedy
8	Printer unit failure		Turn OFF the instrument and use the remedy described below. Then turn ON the printer again.
		① Paper has jammed in the printer	① Remove the jammed sheet of paper
		② Improper printer unit connection	② Check to see if the printer is properl connected to the instrument.
		③ Printer failure	③ Replace the printer.
			* Contact your nearest store if the instrument does not recover after replacement of the printer.
9	Data cannot be stored because the memory is full.	No free space in the memory	Delete the data stored in the memory. (☞ Page 81)

● Other troubles

Remedies for various trouble with no Err No. displayed are described below.

Problem	Cause	Remedy
No data display with the power on	• No batteries	• Set new batteries.
	• Improper position of the positive and negative poles	• Set the batteries properly while paying attention to the positive and negative poles.
	• Battery voltage drop	• Replace the batteries with new ones.
	• Improper instrument battery contact	• Use radio pliers to narrow the positive terminal of the battery snap.
No setting change possible	• Automatic data storage is under way	• Press the CAL key to stop the automatic data storage.
No key operation possible	• The key lock function is working	• Turn OFF the instrument. Then turn ON the instrument again. (☞ Page 76)
	• Failure to calibrate the sensor or wrong calibration.	• Calibrate the sensor properly.
Blinking measured value	• Improper measurement sample	• Use a sample that is in the measurement range.
	• Sensor contamination	• Clean each sensor.
	• Poor calibration is possible. (The standard solution is contaminated.)	• Carry out correct calibration.
tYPE Err The Err is displayed and the operation cannot be performed.	• Improper connection of the cable connector to the instrument	• Connect the connector to the instrument properly and turn on the instrument again.
	• Cable disconnection	• Contact your nearest store.
	• Instrument inside failure	• Contact your nearest store.

● Troubleshooting for the TURB sensor

If an abnormal value such as -10, 800 or more is indicated, or indication does not become stable, follow as below instructions.

Remove the contamination of the sensor

Remove the cover of the turbidity (TURB) sensor, and clean the sensor with cotton swab.
Contamination or bubbles on the sensor may cause fluctuation of TURB values.

Remove bubbles around the sensor

When immersing sensor in the calibration cup, be sure lower it slowly. Quick immersion may cause bubbles on the sensor, which can have bad influence on calibration accuracy to give abnormal value indication.

Use of new standard solution

When calibration, clean the sensor before immersing it in the new standard solution. In case of zero calibration, when the standard solution is turbid or contaminated, calibrate again with the new standard one.

Points to be noted in making measurement

Immerse the sensor slowly in the sample. In case of abnormal measurement value observed, contamination or bubbles adhering may be suspected. So, shake greatly the sensor. Since immersion of the sensor in the sludge layer at the bottom of the sample can prohibit accurate measurement, shake greatly enough to remove the sludge.

● Maintenance of DO sensor

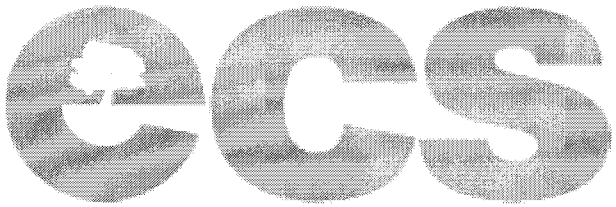
Durable life of DO sensor is generally one year, however, it may vary depending on the using condition. In case of the failure of calibration or breakage of the diaphragm, take either of the following steps according to the using period.

Within one year after purchasing :

Obtain diaphragm replacement kit (optional) to replace the used diaphragm and replenish the internal solution for restoration.

When exceeding one year after purchasing :

Replace by the new DO sensor.



Environmental Compliance Services, Inc.

STANDARD OPERATING PROCEDURES
FOR
ENVIRONMENTAL COMPLIANCE SERVICES, INC.
AT
SOUTH CAROLINA UST SITES

Prepared For:

Environmental Compliance Services, Inc.
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October 2011

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STANDARD OPERATING PROCEDURES

This document details the standard operating procedures (SOPs) employed by Environmental Compliance Services (ECS) of Agawam, Massachusetts. These SOPs are employed by ECS when performing environmental assessments, hydrogeological investigations, and remedial activities on properties with releases of oil and hazardous materials. These SOPs are based on current commonly accepted professional standards and practices in the environmental field.

These SOPs cover the technical aspects of drilling, installation of monitoring wells, sampling of environmental media, and hydrogeological investigations. These activities will be conducted in general accordance with the SOPs unless site-specific conditions are encountered. Any changes in SOPs due to site specific conditions will be specified within a scope of services prior to the performance of the work, if known. If conditions are encountered during the performance of the work, the changes will be duly noted within the report documenting the work. Alternative methods are discussed for jobs requiring a lesser level of quality assurance and quality control (QA/QC).

These SOPs are based on established procedures included within the following: guidance documents produced by the American Society for Testing and Materials (ASTM), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC); published professional papers; and current professional standards and practices. References for cited documents and papers are attached.

GENERAL SAMPLING PROCEDURES FOR AQUEOUS AND SOLID MATRICES

During field sampling activities, the following applicable procedures will be practiced for sample collection:

- Whenever possible, samples will be collected first from the location expected to be least contaminated. Samples that are expected to be most contaminated will be collected last.
- Accurate and detailed field notes will be maintained in a bound field notebook. Soil samples will be examined and logged in the field.
- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.
- Soil samples will be selected for analysis based on the results of qualitative field screening for total volatile organic vapors, visual and olfactory observations, and the depth of the water table.
- Sample containers will be labeled with the site name, project number and date prior to being filled with a sample.
- All sample collection, handling, and shipping information will be recorded in a field notebook.
- Groundwater samples will be logged in a field notebook. Samples of other matrices (sediment, surface water, soil, etc.) will be logged in a field notebook.
- All samples should be collected according the specific requirements of the intended analytical method. Tables 1 and 2 provide lists of sample containers, preservation and holding time requirements for aqueous and soil/sediment samples, respectively.

Table 1: Sample Container, Preservation, and Holding Time for Groundwater

Table 1 **Sample Container, Preservation, and Holding Time for Groundwater**				
Analyte	**Analytical Method**	**Container**	**Preservation**	**Holding Time**
Benzene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Toluene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethylbenzene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Total Xylenes	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
Total Naphthalenes	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1 ,2-Dichloroethane	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
MTBE	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
EDB	8011	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl, Residual Chlorine present: add $Na_2S_2O_3$ to make 0.008% concentration	14 days
ETBE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
3,3-Dimethyl-1- butanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAME	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
DIPE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBF	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1,2,4- and 1,3,5-trimethyl benzene isomers	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-butyl, sec-butyl, and tert-butyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
isomers				
Isopropyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-propyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Full List 8260B Scan	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C	7 days
Benzo(a)anthracene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 4° C	7 days until extraction 40 days after extraction
Benzo(b)flouranthene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Benzo(k)flouranthene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Chrysene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Dibenz(a,h)anthracene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
TPH (Oil & Grease)	9070A	1 Liter Glass	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Barium	6010C or 6020A	Polyethylene or Glass	HNO_3 to pH <2	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Chromium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Mercury	7470A	Polyethylene or Glass	HNO_3 to pH <2	28 days
Selenium	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months

Table 1 Sample Container, Preservation, and Holding Time for Groundwater				
Analyte	**Analytical Method**	**Container**	**Preservation**	**Holding Time**
Nitrate	9210 or 9056	Polyethylene or Glass	Cool to 4° C	48 hours
Sulfate	9056	Polyethylene or Glass	Cool to 4° C	28 days
Methane	Kerr Method RSKSOP-175 rev 2, May 2004	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C, pH < 2 with 1:1 HCl	14 days
Ferrous Iron	SM3500-Fe D	Glass	None	48 hours [1]
pH	9040C	NA	NA	Within 15 minutes
Conductivity	9050A	NA	Cool to 4° C	28 days
Turbidity	SM-2130B	NA	Cool to ~ 6° C	48 hours
Temperature	SM-2550B	NA	NA	Within 15 minutes
Dissolved Oxygen	SM-4500 O G or ASTM D888-05	NA	NA	Within 15 minutes

1 Analysis should be performed immediately in the field; however, if analysis is done in a laboratory, holding time is not to exceed 48 hours

Table 2 Sample Container, Preservation, & Holding Time for Soil				
Analyte	**Analytical Method**	**Container**	**Preservation**	**Holding Time**
Benzene	5035 with 8260B	See Method for Requirements in SW 846		
Toluene	5035 with 8260B			
Ethylbenzene	5035 with 8260B			
Xylenes	5035 with 8260B			
Total Naphthalenes	5035 with 8260B			
MTBE	5035 with 8260B			
Benzo(a)anthracene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(b)fluoranthene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(k)fluoranthene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Chrysene	3535A, 3540C, 3541, 3545A or 3550C	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after

Table 2
Sample Container, Preservation, & Holding Time for Soil

Analyte	Analytical Method	Container	Preservation	Holding Time
	with 8270D			extraction
Dibenz(a,h)anthracene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (DRO)	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (GRO)	5035 with 8015C	See Method for Requirements in SW 846		
TPH (Oil & Grease)	9071 B	Wide-mouth glass container with Teflon-lined lid	Cool to 6° C	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	None	6 months
Barium	6010C or 6020A	Polyethylene or Glass	None	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Chromium	6010C or 6020A	Polyethylene or Glass	None	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Mercury	7471 B	Polyethylene or Glass	None	28 days
Selenium	6020A or 7010	Polyethylene or Glass	None	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
TCLP (metals)	1311	See Method for Requirements in SW 846		
Total Organic Carbon (TOC)	9060A	Polyethylene or Glass	Coot to 4° C	28 days

- All samples will be placed in a chilled, thermally-insulated container containing ice. Blue ice, ice packs, or ice substitutes are not able to reach and maintain the required temperature until receipt at a laboratory.

- All soil samples for volatile organic compound analysis must be collected, preserved, and handled according to published method procedures.

DECONTAMINATION

Decontamination will be performed in order to: minimize the spread of contaminants on the Site and from one sampling location to another; reduce the potential exposure of field personnel to contaminants; and to ensure good data quality and reliability. Decontamination of all field analytical testing and sampling equipment will be performed according to the following procedures. These procedures are based on ASTM Designation D 5088-90, USEPA CERCLA QAPP Review Guidance, 1987, and USAEPA Region 4 Environmental Investigation guidelines (SOP & QAM, 2001).

Equipment cleaning procedures include pre-field, field, and post-field decontamination. Non-disposable equipment will be decontaminated after completing each sampling event. In cases of gross contamination (free phase product), rinse water will be contained for proper disposal according to municipal, state, and federal regulations. Decontamination procedures will be monitored through sampling and analysis when quality assurance/quality control checks are necessary.

Equipment will be dedicated to each sampling point and decontamination will be performed at the off-site facility as much as possible.

Decontaminated equipment will be rested on polyethylene sheeting at each sampling point.

Samplers will use new disposable gloves at each sampling point.

Potable water from the public water supply will be used for control rinse water.

A certified laboratory supply of deionized water will be used for decontamination of field testing and sampling equipment and for the collection of rinsate blanks. Deionized water will be stored in Nalgene, glass, or Teflon containers. The storage area containing the deionized water will be separated from the storage area for solvents.

Equipment rinsate blanks will be collected when a quality control check of the decontamination procedure is necessary. This check will not be performed if dedicated equipment is used. One blank will be collected at least once during a sampling event for each different piece of sampling equipment used. Rinsate blanks will be prepared by pouring deionized water over the decontaminated piece of equipment and collecting it in the sample container. The equipment rinsate blank will be analyzed for the same analytes as the samples that have been collected with that piece of equipment.

1.0 MATERIALS

- health and safety equipment;
- laboratory-supplied deionized water;
- phosphate-free detergent (Alconox, Liquinox);
- potable water (municipal water source);
- methanol;
- Hexane;
- Acetone;
- nitric acid rinse solution;
- wash basins;
- inert brushes;
- polyethylene sheeting;
- large heavy duty garbage bags;
- spray bottles;
- zip-lock bags;
- paper towels/Handiwipes;
- disposable gloves.

2.0 DECONTAMINATION PROCEDURES

- Soil and sediment sampling equipment (stainless steel sampling scoop, tool, and bowl, split-spoon and macro-core sampler, knife) will be decontaminated in the field after each use.

- Soil and sediment sampling equipment will be decontaminated as follows: scrubbed with inert brushes in a bucket containing phosphate-free detergent and potable water; rinsed with potable water; rinsed with pesticide grade methanol; and finally rinsed with deionized water. The final potable water and deionized water rinse volumes will equal 5 times the volume of the methanol rinse. The equipment will be allowed to air dry and will be stored in a clean environment until reused.

- Water quality instruments (e.g. Horiba Water Quality Meter), interface probe, down-hole slug test equipment, well development equipment, and other measuring instruments will be decontaminated between uses by rinsing with Alconox or Liquinox, followed by potable water and deionized water rinses. A methanol rinse will be utilized prior to the deionized water rinse in the event of gross contamination such as contact with free-phase product.

- The drill rig, direct-push technology equipment, and all drilling equipment and associated tools, including but not limited to augers, drill casing, drill rods, sampling equipment, and wrenches, will be steam cleaned prior to beginning the drilling on the Site. This cleaning will consist of using a high pressure detergent steam cleaning equipment, followed by a nanograde methanol swabbing if gross contamination was present. This will be followed by a controlled water rinse. Any down-hole equipment (auger flights, rods, sampling equipment, etc.) coming in contact with gross contamination (i.e. free phase product) will be steam-cleaned between uses. Otherwise equipment will be scrubbed manually with potable water and Alconox as needed to remove soil between uses.

- Sampling equipment and probes will be decontaminated in an area covered by polyethylene sheeting adjacent to the sampling location.

- In cases of gross contamination (i.e. free phase product) rinse water will be collected for proper disposal according to municipal, state or federal regulations. Contaminated solids (disposable

gloves, clothing, polyethylene tubing and sheeting, etc.) will be collected and characterized for proper disposal.

- Decontamination procedures will be fully documented in the field notebook. The following information should be recorded: Site location, date, time and weather; sample location where equipment used; location where decontamination was performed; field personnel performing the decontamination; decontamination procedures; disposal of rinse water if necessary; samples collected for QA/QC and analytical results.

- Health and safety procedures associated with decontamination are found in the Health and Safety Plan.

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STANDARD OPERATING PROCEDURE

SAMPLE MANAGEMENT

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CAR-C-001-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	SOT-ALL-C-001-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-C-001-rev.01

APPROVALS

Laboratory General Manager — Date: 6/7/2010

Laboratory Quality Manager — Date: 6/3/2010 6/4/2010

Department Manager — Date: 6/4/10

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION		PAGE
1.	Purpose	3
2.	Scope and Application	3
3.	Summary of Method	3
4.	Interferences	3
5.	Safety	4
6.	Definitions	4
7.	Sample Collection, Preservation, and Handling	5
8.	Equipment and Supplies	5
9.	Reagents and Standards	6
10.	Calibration	6
11.	Procedure	6
12.	Quality Control	12
13.	Method Performance	13
14.	Pollution Prevention and Waste Management	13
15.	References	13
16.	Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.	14
17.	Revisions	14
Attachment I – Example COC Form		16
Attachment II – Example SCURF		17
Attachment III – Example SRF		18
Attachment IV – Method Hold Times		19

1. Purpose

The purpose of this Standard Operating Procedure (SOP) is to outline the procedures involved with the receipt, login, staging and disposal of samples received by Pace Analytical Services, Inc, Carolina's.

2. Scope and Application

2.1. The policies and procedures contained in this SOP apply to all personnel involved in the receipt, login, analysis, disposal and transfer of samples.

2.2. A sample acceptance policy is contained within the Procedure section that outlines guidelines for acceptable sample conditions. Any deviation from these guidelines requires detailed documentation within the report, usually as a footnote, or on the chain-of-custody, or SCURF and may require client contact.

3. Summary of Method

3.1. Samples are delivered to the laboratory via several delivery mechanisms. Samples received are checked for adherence to the Sample Acceptance Policy with any discrepancies noted. Discrepancies are communicated to the client for their acknowledgement.

3.2. The Laboratory Information Management System (LIMS, EPIC PRO) assigns all samples with a unique sample number and manages the analyses assigned to each sample.

3.3. Samples are labeled with the appropriate information and staged in refrigerated sample storage coolers if temperature preservation is required or on open shelves for samples not requiring sub-ambient temperature preservation. Samples will remain under these conditions until prepared and / or analyzed.

3.4. Samples and associated sub-samples (digestates, extracts, etc.) are maintained for 30 days after the date received unless otherwise requested by the client or other regulatory agency.

3.5. Samples are disposed of in accordance with local laboratory regulatory requirements and the laboratory's waste handling procedures.

4. Interferences

4.1. Samples may be prone to cross contamination from others within the same delivery group or from other client projects. The sample receiving personnel must make every effort to minimize cross-contamination.

4.2. Preservation checks are one of the most likely situations where cross-contamination may occur. Materials used in the process must be specific to each sample and may not used for multiple samples.

4.3. Samples are stored under specific conditions and in specific locations, typically by container type. However, consideration must be given to samples that are uniquely different from others. Samples that are anticipated to be severely contaminated should be segregated from others in anticipation that the high levels of contaminants may cross-contaminate others in close proximity.

5. Safety

5.1. Hazards and Precautions - Use extreme caution in handling samples and wastes as they may be hazardous. Each reagent and chemical used in this method should be treated as a potential health hazard. Reduce exposure by the use of gloves, lab coats, safety glasses and ventilation hoods. Material Safety Data Sheets (MSDS) are on file and available to all personnel.

5.2. All personnel involved in sample management are responsible for complying with OSHA and DOT regulations. These regulations pertain to the safe handling and/or shipping of the chemicals specified in this procedure. A reference file of Material Safety Data Sheets (MSDS) is available to all personnel. Refer to the Sample Control Supervisor for any questions or concerns related to the safe handling and shipment of hazardous materials.

5.3. Other laboratory safety requirements are contained in the Chemical Hygiene Plan/ Safety Manual. Immediate questions can also be addressed with the local Safety Manager.

6. Definitions

6.1. Definitions of terms found in this SOP can also be found in the Pace Quality Manual. When definitions are not consistent with NELAC defined terms, an explanation is provided in this SOP or the Pace Analytical Services' Quality Manual Glossary.

6.2. **LIMS - Laboratory Information Management System:** a computer system used to manage the flow and traceability of environmental samples and associated data within the laboratory.

6.3. **NELAC - National Environmental Laboratory Accreditation Conference:** a national laboratory-accrediting agency.

6.4. **MSDS - Material Safety Data Sheet:** contains information on chemicals used in the laboratory.

6.5. **COC - Chain-of-Custody:** a form used to record the field identification of samples collected, analyses requested, date and time of collection, sample preservation used, and traceability of samples from time of collection until delivery to the laboratory. This is a legal document.

6.6. **SCURF - Sample Condition Upon Receipt Form:** a form used to record the condition of samples received in the laboratory.

6.7. **Matrix:** the bulk characteristics of a sample. See Table 6.1.

6.8. **SRF – Sample Receipt Form:** form generated by LIMS system after a project is logged in. Contains sample and project information.

6.9. **UN Number** - identification numbers preceded by the letters UN are associated with proper shipping names considered appropriate for international and domestic transportation. These shipping names along with the identification numbers are located in the Federal Register (49CFR172.101).

6.10. **Sample Custody:** a sample is considered to be in someone's custody if:

6.10.1. It is in one's physical possession.

6.10.2. It is in someone's view, after being in someone's physical possession.

6.10.3. It is kept in a secured area, restricted to authorized personnel only.

Table 6.1

NELAC defined matrix	Pace Analytical defined matrix
Aqueous: any liquid sample not defined as drinking water or saline. Includes surface water, groundwater, effluents, TCLP and other extracts.	Waters: includes groundwater, wastewaters, drinking waters, effluents, and any free-flowing liquids.
Drinking water: any aqueous sample that has been designated as potable or potentially potable.	Not assigned as a separate matrix, but samples are assigned to drinking water methods.
Saline/Estuarine: any aqueous sample from an ocean, estuary or other salt water source	Not assigned as a separate matrix from waters.
Non-aqueous liquid: any organic liquid with <15% settleable solids.	Other: Not assigned as a separate matrix from waters.
Biological tissue: any sample from a biological origin such as fish tissue or plant material.	Tissue: would include tissue and plant samples.
Solids: includes soils, sediments, sludges and other matrices with >15% settleable solids	Soils: includes soils, sediments, sludges; other solid materials such as wood, metal, etc. may fall under another heading.
Chemical waste: a product or by product of an industrial process that results in a matrix not defined above.	Oil: includes any non-solid material not classified as waters.
Air: vapor samples including those contained within sorbent tubes, filters or other devices.	Air: vapor samples including those contained within sorbent tubes, filters, or other devices.
No corresponding matrix to wipe; wipes would be included in with solids.	Wipe: includes wipe samples or swabs taken to check for surface contamination.

7. Sample Collection, Preservation, and Handling

7.1. Acceptable sample preservation, containers, and hold times are located in Pace Analytical Services' Quality Manual, the laboratory's method SOP or in the applicable test method. Samples are stored separately from all standards and reagents and any known highly contaminated samples.

NOTE: To avoid contamination, no food or drink products can be located near the areas where samples are unpacked, labeled, or staged.

7.2. Sample Storage – See Section 12.3 for general storage guidelines.

8. Equipment and Supplies

Table 8.1

Equipment/Supplies	Description/ Comments
Sample Labels	
Thermometers	Infrared, digital, NIST traceable
Sample storage cooling units	Capable of holding required storage temperatures
Chain-of-Custody forms	
Sample Condition Upon Receipt Form (SCURF)	
pH Paper	
Label Printer	
LIMS computer system	EPIC Pro
Disposable pipettes	
Sample containers	C&G, SCI/SPEC, Daniels Scientific

9. Reagents and Standards

9.1. All reagents used in this procedure must be labeled with:

- Laboratory reagent identification number
- Unless otherwise noted, the name and concentration of the reagent
- Date the reagent was received, opened and, as needed, prepared
- Person preparing reagent
- Expiration date

9.2. **Reagents**

Table 9.1 – Sample Preservation Reagents

Reagent	Formula	Concentration
Sulfuric Acid	H_2SO_4	Concentrated
Nitric Acid	HNO_3	Concentrated
Hydrochloric Acid	HCl	Concentrated
Sodium Hydroxide	NaOH	50% or Pellets
Sodium Thiosulfate	$Na_2S2O_3 \cdot 5H_2O$	0.02% (0.2g / 1 liter DI water)
Zinc Acetate Solution (for sulfide)		
Methanol	MeOH	Purge and Trap Grade
Ascorbic Acid (for cyanide)		

9.3. For acids, bases and other reagents obtained from other laboratory departments, this information is located in the department reagent preparation log. In the event that these reagents are managed within the Sample Receiving group, the department must maintain its own reagent preparation log.

9.4. Some Pace labs use pre-preserved sample containers. In this case, documentation must be maintained for bottleware and preservation traceability.

10. Calibration

10.1. Thermometers, IR-Guns, and other equipment used for measuring temperatures must be calibrated according to the most current revision of the Support Equipment SOP S-ALL-Q-013.

11. Procedure

11.1. **Sample Receipt**

11.1.1. The laboratory receives client samples via three major methods: mail/commercial delivery service, Pace Analytical courier/field services and hand delivery.

11.1.2. Pace labs use courier services that pick up client samples on either a regular schedule or on an as-needed basis as communicated by Project Managers or by the client.

When the client is present during courier pick-up, the client signs the chain-of-custody (COC) relinquishing custody to the courier. The courier signs the COC as accepting the samples and provides the client with a copy of the COC. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab.

If the client is not present during courier pick-up, the courier signs the COC as accepting the samples and leaves a copy of the COC for the client. If a client also has a sample log in use, the

courier must sign and date the log when the samples are picked up. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab. The date/time of delivery to the lab by the courier is the official date/time received by the lab (analogous to the official date/time of receipt by an outside commercial carrier or courier).

To ensure the sample security, the Pace courier custody seals all the coolers being picked up and the courier vehicle is locked at each client pick-up location.

11.1.3. The chain of custody (COC) (see Attachment I) is signed immediately upon receipt of the samples from the client. If the client drops off the samples or they are picked up by the Pace courier, a copy of the signed COC is given to the client at that time. If samples are received via commercial carrier or mail delivery, the COC should be signed immediately when the cooler or package is opened and ultimately placed in the project file. The delivery date and time is considered the date/time received.

11.1.4. Sample receiving personnel should review the COC for any evidence of rush turnaround requests and analyses with short hold times. Projects that fall under these conditions should be given immediate attention. The project manager responsible for that client should be alerted in the event that they have not already alerted the laboratory to the project as it may be possible that the client did not pre-schedule the project. Once the sample(s) are received and logged into the LIMS, the sample technician and project manager will coordinate the notification and delivery of samples to the laboratory.

11.1.5. **Sample Acceptance Policy** - This section constitutes the laboratory's sample acceptance policy. Copies of this policy should be provided, in the form of a letter, fax or e-mail to each client or sampler, as necessary. Samples are considered acceptable if they meet the following criteria:

- There is proper, full, and complete documentation (i.e. chain-of-custody) including:
  - Unique client sample identification. Sample containers are labeled using unique client sample identifications (traceable to the chain-of-custody or other documentation) on durable, waterproof labels or equivalent.
  - Location of sampling (site), time and date of sample collection;
  - Sampler's name and signature;
  - Preservative used (if any);
  - Sample type (matrix);
  - Requested analyses;
  - Any special analysis requirements
- Appropriate sample containers have been used.
- Holding times have not been exceeded upon receipt (holding times are available in Attachment IV). If they have been exceeded, client permission to proceed is required.
- Adequate sample volume has been received for all tests requested (if not, client permission to proceed is required). For data packages requiring quality control samples to be analyzed on client specific samples, the client must include enough sample to complete the QC samples as well.
- When there is insufficient sample to complete the QC samples and the client does not wish to send more sample or more sample cannot be obtained because of sample volume

available or holding time issues, the lack of appropriate volume or weight is noted as a sample acceptance policy deviation on the final report. Batch quality control samples will be used in place of project-specific quality control samples.

- Samples that require sub-ambient thermal preservation are considered acceptable if they are within +/- 2.0 °C of the required temperature (for samples needing to be at 4.0 °C, the acceptable range is just above freezing to 6.0 °C, as defined by NELAC). The sample cooler (ice chest) temperature is recorded directly on the COC. Samples received outside of this criterion must have a notation on the COC and/or on the Sample Condition Upon Receipt Form (SCURF) indicating that the temperature was outside of criteria.
- Samples that are delivered to the lab immediately after collection are considered acceptable if there is evidence (i.e. samples arrive packed with ice) that the chilling process has begun. If samples arrive at temperatures that are outside these requirements, the client will be notified and analysis will NOT proceed unless otherwise directed by the client. Data will be appropriately qualified.

11.1.6. Open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottle using the infrared (IR) thermometer gun. A representative sample will reflect an "average" condition of the samples in the cooler and, depending on the manner in which they are packed, may not necessarily be in direct contact with the cooling material.

NOTE: If an IR gun is used, the temperature should be taken from an opaque surface such as the bottle label. Measurements taken through a transparent surface (clear or amber glass) may not be reliable and should incorporate a specific temperature correction factor for that surface reading.

11.1.7. Record the temperature on the COC (example in Attachment I) and/or SCURF (example in Attachment II). In addition, record the type of "ice" used for packing the cooler (i.e. wet ice, "blue ice", gel packs, etc.).

11.1.8. If samples within a project are spread over multiple coolers and one or more of the coolers are outside of the temperature criteria, then the contents of the cooler must be itemized and the samples and sample containers affected by the out-of-control temperature must be listed on the SCURF for inclusion with the final report. This itemization must be retained in the project file for future reference.

11.1.9. Unpack the cooler and chain of custody (COC). Organize the samples, grouped by client sample ID, according to the order on the COC. Review COC against samples to make sure the bottles received match the analysis requested. All anomalies must be recorded on the SCURF.

- The items that must be checked at a minimum if the lab receives coolers late or will not unpack a cooler until the following day are; take the temperature of the samples in the cooler, sign the COC and check for short hold analyses.

11.1.10. Discard any ice or water that remains in the cooler and the packing material used to secure the samples. Water or ice should be discarded down a drain that connects to the local sewer. Packing materials should be placed in the garbage. If a sample container was broken, the contents remaining in the cooler MUST be discarded in a manner consistent with the hazardous waste handling standard operating procedure.

11.1.11. **pH Verification Instructions performed by Sample Control**

- The pH of the sample must be verified on all preserved sample bottles requiring pH preservation (see exceptions below).

- Open each preserved bottle (except as noted below). Use a new disposable pipette, a stirring bar or another inert utensil to withdraw a small portion of the sample. Dispense the aliquot on a sample specific narrow-range pH strip and check the pH.

  NOTE: Do not check the pH of samples for coliform, volatiles, TOC, WI-DRO, oil and grease, or hexane extractables (method 1664). These analyses will be checked by the analyst at the bench and should not be opened by sample management personnel

Table 11.1 – General pH Preservation Requirements by Preservative

Sample Preservatives	Sample pH Requirement
HCl	must be less than 2
HN03	must be less than 2
H2SO4	must be less than 2
NaOH	must be greater than 12
ZnAcetate & NaOH	must be greater than 9

- If the pH is not within the required range, indicate the anomaly on the SCURF form or on the COC. If all bottles are unpreserved for a sample, write N/A in the section of the SCURF.

11.1.12. **pH Preservation Adjustments – Insert if adjustments are performed by Sample Control**

- If a sample container does not meet the pH preservation required, the pH of the sample must be recorded on the COC or SCUR. Additional preservative is added so that the preservative content is <1% of the sample container volume. The sample is mixed and the pH is taken again. The new pH reading is also recorded on the COC or SCUR along with the amount, type and lot number of the preservative added. In addition, the sample container is marked with the preservative added, volume added, date, time and initials of the technician. If a metals sample must be acidified, it must be held for 24 hours before it can be processed.

11.1.13. **Total Residual Chlorine Verification Instructions** - Total residual chlorine must be verified at the time of receipt or at the bench as required by the method or individual state regulatory agency for certain analyses (see Table 11.2). Do not check the sample bottles for those analyses listed in 11.1.10.

- Open the appropriate sample container. Utilizing a new disposable pipette, stirring bar or other inert utensil; withdraw a small portion of the sample. Dispense the aliquot on a sample specific residual chlorine test strip.
- If any chlorine is detected, regardless of amount, note the information on the COC, SCURF or analytical bench sheet.

Table 11.2 – Analyses requiring Residual Chlorine Verification

Analyses
Ammonia (NH3)
Nitrate (NO3)
TKN
Cyanides

11.1.14. Note any discrepancies pertaining to samples as defined by the sample acceptance policy detailed above on the COC or SCURF. Any discrepancies involving temperature, preservation, hold time, collection dates and times, sample volume, sample containers, and unclear analysis, must be reported to project management as soon as possible.

11.1.15. For short hold samples, the laboratory is notified and the samples are staged per section 12.3.

Table 11.3 – Analyses with Hold Times Less Than 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Nitrite (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

11.2. Sample Login

11.2.1. Rush projects and/or projects with short holds should be logged in first. After these projects have been addressed, projects should be addressed on a first in, first out basis.

11.2.2. Clients and Project Profiles are created in EPIC Pro as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup*. Projects are logged as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*

11.2.3. Tests are assigned as per as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup,* and as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*

11.2.4. Generate sample labels and Sample Receipt Form (SRF) (see Attachment III).

- Local SRF generation is as per Section 3 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*
- Local sample label generation is as per Section 2 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*

11.2.5. Attach the sample labels to the appropriate sample bottles.

- Sample Management must make sure all sample ID's match COC. Samples are staged on the counter in rows by Sample ID. All sample containers are recorded on COC.

- Sample labels are printed in Sample Management. One label is printed per sample container, except for VOA sample containers where two labels are printed for each container.
- The label is placed onto the side of the sample container. On VOC sample containers, one is placed onto the side and one is placed onto the cover.

11.2.6. The project manager must review and verify the following information by comparing the COC to SRF. Some of this information may not be provided by the client and those fields should be left blank.

- Report Recipient
- Invoice Recipient
- Additional Report Recipient
- PO#
- Project Name
- Project Number
- Requested Due Date
- Sample ID
- Matrix
- Collection Date & Time
- Received Date & Time
- Analysis: Double check compound lists
- Price
- Region Codes
- Work Region % Split (for Pace internal subcontracted work)
- Has Subbed Work been shipped

11.2.7. If any samples require analyses performed outside of the laboratory, prepare the samples for subcontracting according to the procedures listed in the SOP describing the subcontracting of analytical services SOT-ALL-C-003 most current revision.

11.3. **Sample Storage**

11.3.1. While awaiting login on the day received, samples may remain in the shipping cooler as received prior to login. Once unpacked, samples will be logged into the LIMS in a timely manner and returned to appropriate storage conditions as soon as possible. For the exceptional case where samples are not logged in the day they were received, they must be stored under appropriate temperature-controlled conditions until login takes place. In all cases, the same temperatures must be taken as soon after receipt as possible and the samples stored so as to maintain the required storage conditions while awaiting log-in.

11.3.2. Once logged into the LIMS and labeled, samples are placed in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below:

- Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

- Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved with deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.
- Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:
  - The 5g aliquot is preserved with a stir bar, 10mL of deionized water and a stir bar, or 10mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be immediately extracted with methanol and stored in a segregated volatiles cooler until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

- Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.
- Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

- Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Hexavalent Chromium analysis is needed or the matrix of the samples are solids. If Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler.

11.4. Disposal of Unconsumed Samples

Refer to the laboratory standard operating procedure for waste handling and disposal SOT-S-ALL-S-002, most current revision.

12. Quality Control

12.1. For any sample received at the laboratory that does not meet the sample acceptance, hold time or preservation criteria, the client must be contacted by project management and advised of the situation.

12.1.1. If the client instructs the laboratory to proceed with the analysis, all appropriate personnel/departments must be informed and the client approval must be documented on the SCURF or COC. Data will be appropriately qualified.

12.1.2. The client may also instruct the laboratory to preserve the samples at the laboratory prior to proceeding with analysis. This must be documented on the COC or the SCURF, and should be noted in the final laboratory report.

12.2. All supporting documentation related to sample custody must be retained by the laboratory. This includes; memorandums, fax transmissions, all paperwork received with the COC and copies of email transmissions.

12.3. **Documenting Discrepancies during receipt of samples.**

12.3.1. The following are examples of client discrepancies that need to be documented on the appropriate paperwork (i.e. SCURF).

- Lost samples/insufficient sample volume
- Broken or missing bottles
- Missing COC
- Mislabeled bottles
- Preservation error
- Missing sample related details (date, time, sample type)

12.3.2. Pace sample management discrepancies will be documented on the SCURF, COC or within the project files. Discrepancies attributable to errors and omissions on the part of the laboratory will be addressed and resolved through the formal corrective action process.

13. Method Performance

13.1. Not Applicable

14. Pollution Prevention and Waste Management

14.1. In order to minimize the amount of waste generated during this procedure, analyst should prepare reagents in an amount that may be used in a reasonable amount of time (i.e. before a reagent expires).

14.2. The Chemical Hygiene Plan/Health and Safety Plan contains additional information on pollution prevention.

15. References

15.1. Pace Quality Manual - Pace Analytical Services, Inc., current revision.

15.2. SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, USEPA, current revision.

15.3. National Environmental Laboratory Accreditation Conference (NELAC), Quality Systems Chapter 5; current revision.

15.4. American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1995, Standard Methods for the Examination of Water and Wastewater, A.E. Greenberg, L.W. Clesceri, A.D. Eaton and M.A.H. Franson, eds., 19th ed., American Public Health Association, Washington D. C.

15.5. U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

15.6. U.S. Environmental Protection Agency, 1988, Methods for Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio.

15.7. Code of Federal Regulations, Title 40, 72FR11239; March 12, 2007

15.8. Code of Federal Regulations, Title 40, 72FR14220; March 26, 2007

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I – Chain of Custody, Form F-ALL-Q-020

16.2. Attachment II – Sample Condition Upon Receipt Form, Form F-ALL-C-003

16.3. Attachment III – Sample Receipt Form (SRF), example

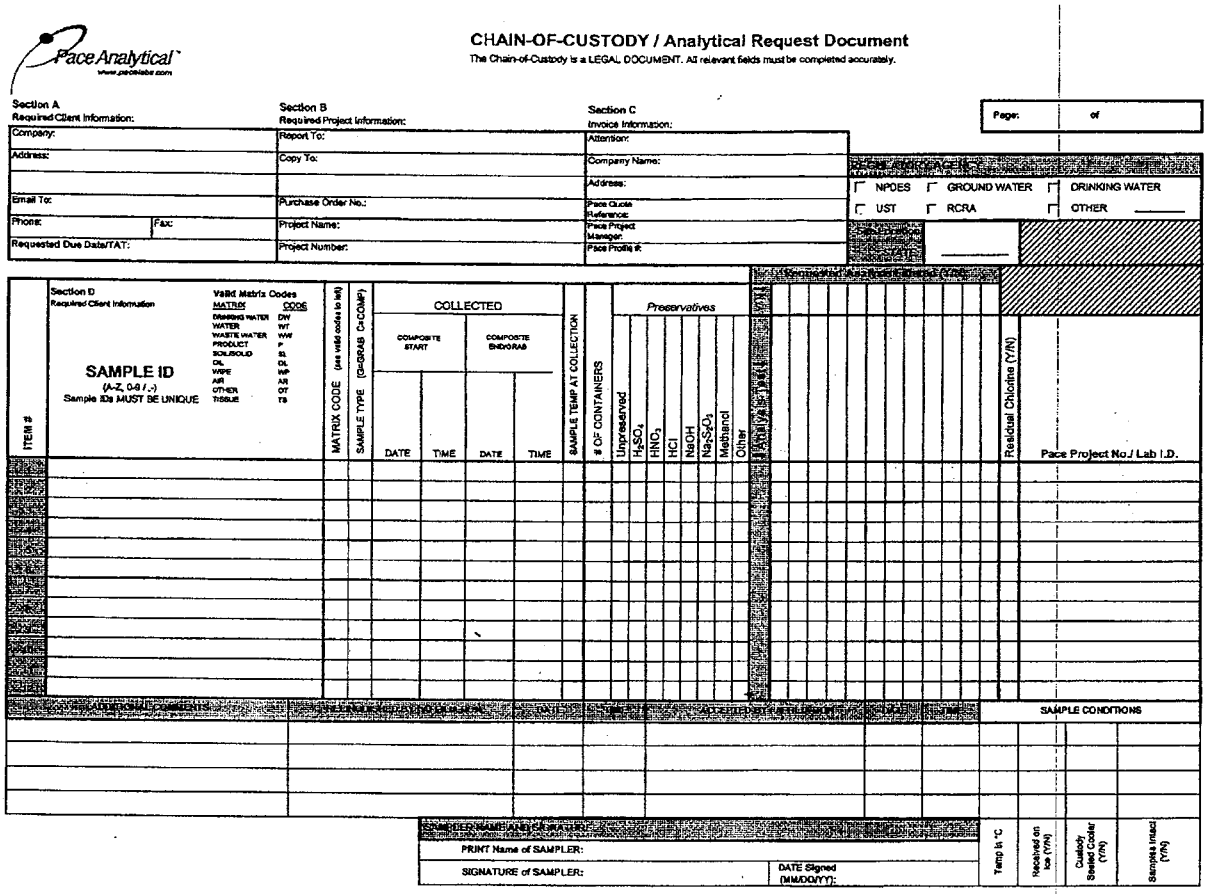
16.4. Attachment IV – Method Hold Time, Container and Preservation Guide

17. Revisions

Document Number	Reason for Change	Date
ALL-C-001-rev.0	New	12Jul2004
ALL-C-001rev.1	Removed information on waste and disposal and referred to ALL-S-002, *Waste Handling* Removed information on subcontracting samples and referred to ALL-C-003, *Subcontracting Samples* Removed information on residual chlorine testing in sample management. Those laboratories that require or perform this test in sample management, will include the information in their local addenda Added a general reference to the type of containers purchased in 9.1.10 Added information on the re-use of returned empty sample containers in section 12.1.4 Added shelf life criteria for trip blanks in 12.1.13 Provided more detail on how to check pH preservation in 12.2.8 Added Attachment I, II, III	30Mar2005

SOT-ALL-C-001rev.00	Converted to SOP Template Removed bottle order preparation details for conversion to separate SOP Template Updated COC form Updated SCUR form Included requirement to add Bottle Lot #s to the Bottle Order Form Added Attachment IV –Method Hold Times	28Dec2006
SOT-ALL-C-001-rev.01	Section 1: removed reference to bottle preparation (material was previously moved to another SOP). Section 4.1: reworded second sentence (SR personnel cannot ensure that there will not be cross-contamination). Section 7: removed responsibility section. Responsibilities are listed throughout the SOP and are listed in the Quality Manual. Renumbered subsequent sections, tables and references in SOP. Added section 9.4 regarding the use of pre-preserved containers. Section 10.1: removed specific ALL SOP reference and added ability to add in lab-specific SOP reference. Table 11.2: added cyanides per Client Services 3P meeting notes. Section 15: updated references where applicable. Section 11.1.3: specified that the delivery date and time is the date received. Added new section 11.1.2 regarding courier service and indicated when the official date/time of receipt is. Renumbered rest of the items in this section. Section 11.1.5: sixth bullet point. Added line where labs can add in lab-specific temperature ranges or language if different from that stated. Section 11.1.6: revised the 'two to five sample average' wording with regards to taking sample temperature to 'a representative sample'. Added red lettered sentence about adding local procedure if different from that listed. Section 11.1.7: removed repetitive sentence regarding taking average temperature. Section 11.1.8: reworded for clarity. Section 11.1.9: added editable bullet point for when coolers are not unpacked until the following day. Section 11.1.12: added in possible template language regarding pH. adjustments. Labs have the ability to use this language or add their own procedure. Section 11.3.1: added language to state that samples should be kept in cold storage as much as physically possible. Table 11.3: added gross alpha and residual chlorine to short hold table. Section 15: added CFR references for Method Update Rule. Attachments: replaced COC, SCUR and SRF with current versions. Attachment IV: replaced existing chart with the revised chart from the Quality Manual.	11Dec2008

Attachment I – Example Chain-of-Custody Form



Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Attachment II – Example Sample Condition Upon Request Form

Sample Condition Upon Receipt

Pace Analytical

Client Name: _____ Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals Intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used _____ **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature _____ **Biological Tissue is Frozen:** Yes No **Date and Initials of person examining contents:** _____

Temp should be above freezing to 6°C **Comments:**

Chain of Custody Present:	☐Yes	☐No	☐N/A	1.	
Chain of Custody Filled Out:	☐Yes	☐No	☐N/A	2.	
Chain of Custody Relinquished:	☐Yes	☐No	☐N/A	3.	
Sampler Name & Signature on COC:	☐Yes	☐No	☐N/A	4.	
Samples Arrived within Hold Time:	☐Yes	☐No	☐N/A	5.	
Short Hold Time Analysis (<72hr):	☐Yes	☐No	☐N/A	6.	
Rush Turn Around Time Requested:	☐Yes	☐No	☐N/A	7.	
Sufficient Volume:	☐Yes	☐No	☐N/A	8.	
Correct Containers Used:	☐Yes	☐No	☐N/A	9.	
-Pace Containers Used:	☐Yes	☐No	☐N/A		
Containers Intact:	☐Yes	☐No	☐N/A	10.	
Filtered volume received for Dissolved tests	☐Yes	☐No	☐N/A	11.	
Sample Labels match COC:	☐Yes	☐No	☐N/A	12.	
-Includes date/time/ID/Analysis Matrix:					
All containers needing preservation have been checked.	☐Yes	☐No	☐N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes	☐No	☐N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☐No		Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	☐Yes	☐No	☐N/A	14.	
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☐N/A	15.	
Trip Blank Present:	☐Yes	☐No	☐N/A	16.	
Trip Blank Custody Seals Present	☐Yes	☐No	☐N/A		
Pace Trip Blank Lot # (if purchased):					

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

F-ALLC003rev.3, 11September2006

Attachment III – Example Sample Receipt Form

Sample Receipt Form

Pace Analytical Services, Inc.
Indiana

Pace Analytical®
www.pacelabs.com

Sample Acknowledgement Recipients:

Email:

Bill to:

Final Report Recipients:

Line Item Descriptions:
[4] Water Short VOC

Client P O No:
Phone: 1(317)875-5894
Project Manager: Phaedra Zucksworth
Client Project ID:

Lab Project No: 5018684
Project Deliverables Type: Standard Report
Project Report Due Date: 09/25/08
Profile: 907

Lab Smp ID: 5018684001 **Client Smp ID: RW-3:G090908** Collected Date: 09/09/08 11:25
Proj Smp No: 1 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

Auxiliary Data:

Consultant Project Number:	NA	ENFOS Project (AAAAA-0000):	
Site ID/Facility Number:		Phase:	01
Gem Portfolio:	CENTRAL	SubPhase/Task:	03
State of Sample Collection:	OH	Cost Element:	05
Consultant Name:	URS	RCOP:	no
Rush Charges:	0		

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Sub Total - Sample 208364 $27.00

Lab Smp ID: 5018684002 **Client Smp ID: RW-4:G090908** Collected Date: 09/09/08 11:00
Proj Smp No: 2 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Attachment IV – Method Hold Time, Container and Preservation Guide

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
2, 3, 7, 8-TCDD	1613B	Soil	8oz Glass	None	90/40 Days
2, 3, 7, 8-TCDD	1613B	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	90/40 Days
2, 3, 7, 8-TCDD	8290	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	30/45 Days
Acidity	SM2310B	Water	Plastic/Glass	≤6°C	14 Days
Alkalinity	SM2320B/310.2	Water	Plastic/Glass	≤6°C	14 Days
Alpha Emitting Radium Isotopes	9315/903.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Anions by IC, including Br, Cl, F, NO_2, NO_3, SO_4	300.0/300.1/ SM4110B	Water	Plastic/Glass	≤6°C	Br, Cl, F, SO_4 (28 Days) NO_2, NO_3 (48 Hours)
Aromatic and Halogenated Volatiles	8021	Soil	5035 vial kit	See 5035 note*	14 days
Aromatic and Halogenated Volatiles	601/602/8021	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Bacteria, Total Plate Count	SM9221D	Water	Plastic/WK	≤6°C; $Na_2S_2O_3$	24 Hours
Base/Neutrals and Acids	8270	Soil	8oz Glass	≤6°C	14/40 Days
Base/Neutrals and Acids	625/8270	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Base/Neutrals, Acids & Pesticides	525.1/525.2	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/30 Days
BOD/cBOD	SM5210B	Water	Plastic/Glass	≤6°C	48 hours
BTEX/Total Hydrocarbons	TO-3	Air	Summa Canister	None	14 Days
BTEX/Total Hydrocarbons	TO-3	Air	Tedlar Bag	None	48 Hours
Chloride	SM4500Cl/9250/ 9251/9252	Water	Plastic/Glass	None	28 Days
Chlorinated Herbicides	8151	Soil	8oz Glass Jar	≤6°C	7/40 Days
Chlorinated Herbicides	8151	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Chlorinated Herbicides	515.1	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	14/28 Days
Chorine, Residual	SM4500Cl	Water	Plastic/Glass	None	15 minutes
COD	SM5220C/ 410.3/410.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Color	SM2120B,C,E	Water	Plastic/Glass	≤6°C	48 Hours
Condensable Particulate Emissions	EPA 202	Air	Solutions	None	6 Months
Cyanide, Reactive	SW846 chap.7	Water	Plastic/Glass	None	28 Days
Cyanide, Total and Amenable	SM4500CN/9010/ 9012/335.4	Water		pH>12 NaOH; ≤6°C; ascorbic acid if Cl present	14 Days, 24 Hours if Sulfide present
Diesel Range Organics	8015	Soil	8oz Glass Jar	≤6°C	14/40 Days
Diesel Range Organics	8015	Water	1L Glass	≤6°C	7/40 Days
Dioxins & Furans	TO-9	Air	PUF	None	30/45 Days
EDB & DBCP	504.1/8011	Water	40mL vials	≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Explosives	8330/8332	Water	1L Glass	≤6°C	7/40 Days
Explosives	8330/8332	Soil	8oz Glass Jar	≤6°C	14/40 Days
Ferrous Iron	SN3500Fe-D	Water	Glass	None	Immediate
Flashpoint/Ignitability	1010/1030	Water	Plastic/Glass	None	28 Days
Fluoride	SM4500Fl-C,D	Water	Plastic	None	28 Days
Gamma Emitting Radionuclides	901.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Gas Range Organics	8015	Water	40mL vials	pH<2 HCl	14 Days
Gasoline Range Organics	8015	Soil	5035 vial kit	See 5035 note*	14 days
Gross Alpha (NJ 48Hr Method)	NJAC 7:18-6	Water	Plastic/Glass	pH<2 HNO_3	48 Hrs
Gross Alpha and Gross Beta	9310/900.0	Water	Plastic/Glass	pH<2 HNO_3	180 days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Haloacetic Acids	552.1/552.2	Water	40mL Amber vials	NH_4Cl; ≤6°C	14/7 Days
Hardness, Total ($CaCO_3$)	SM2340B,C/130.1	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Hexavalent Chromium	7196/218.6/ SM3500Cr	Water	Plastic/Glass	≤6°C	24 Hours
Hydrogen Halide & Halogen Emissions	EPA 26	Air	Solutions	None	6 Months
Lead Emissions	EPA 12	Air	Filter/Solutions	None	6 Months
Low Level Mercury	1631	Water	Glass	BrCl	90 days (if preserved and oxidized)
Mercury	7471	Soil	8oz Glass Jar	≤6°C	28 days
Mercury	7470/245.1/245.2	Water	Plastic/Glass	pH<2 HNO_3	28 Days
Metals	7300/7303	Air	Filters	None	6 Months
Metals (and other ICP elements)	6010	Soil	8oz Glass Jar	None	6 months
Metals (and other ICP elements)	6010/6020/200.7/ 200.8	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Methane, Ethane, Ethene	RSK-175	Water	40mL vials	HCl	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Summa Canister	None	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Tedlar Bag	None	48 Hours
Nitrogen, Ammonia	SM4500NH3/350.1	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Kjeldahl	SM4500-Norg; 351.1/351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrate	SM4500-NO3/ 352.1	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Nitrate & Nitrite	SM4500-NO3/ 353.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrite	SM4500-NO2/ 353.2	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Organic	SM4500-Norg/ 351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Non-Methane Organics	EPA 25C	Air	Summa Canister	None	14 Days
Non-Methane Organics	EPA 25C	Air	Tedlar Bag	None	48 Hours
Odor	SM2150B	Water	Glass	≤6°C	24 Hours
Oil and Grease/HEM	1664A/SM5520B/ 9070	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Organochlorine Pesticides & PCBs	TO-4	Air	PUF	None	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082/608	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Oxygen, Dissolved (Probe)	SM4500-O	Water	Glass	None	15 minutes
Paint Filter Liquid Test	9095	Water	Plastic/Glass	None	N/A
Particulates	PM-10	Air	Filters	None	6 Months
Permanent Gases	EPA 3C	Air	Summa Canister	None	14 Days
Permanent Gases	EPA 3C	Air	Tedlar Bag	None	48 Hours
pH	SM4500H+B/9040/ 9041/150.2	Water	Plastic/Glass	None	15 minutes
Phenol, Total	420.1/420.4/9065/ 9066	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Phosphorus, Orthophosphate	SM4500P/365.1/365.3	Water	Plastic	Filter; ≤6°C	Filter within 15 minutes, Analyze within 48 Hours
Phosphorus, Total	SM4500P/ 365.1/365.3/365.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Polynuclear Aromatic Hydrocarbons	TO-13	Air	PUF	None	7/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Soil	8oz Glass Jar	≤6°C	14/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Radioactive Strontium	905.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-226 Radon Emanation Technique	903.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-228	9320/904.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Silica, Dissolved	SM4500Si-D	Water	Plastic	≤6°C	28 Days
Solids, Settleable	SM2540F	Water	Glass	≤6°C	48 Hours
Solids, Total	SM2540B	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Dissolved	SM2540C	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Suspended	SM2540D	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Volatile	SM2540E	Water	Plastic/Glass	≤6°C	7 Days
Specific Conductance	SM2510B/9050/120.1	Water	Plastic/Glass	≤6°C	28 Days
Stationary Source Dioxins & Furans	EPA 23	Air	XAD Trap	None	30/45 Days
Stationary Source Mercury	EPA 101	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source Metals	EPA 29	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source PM10	EPA 201A	Air	Filters	None	6 Months
Stationary Source Particulates	EPA 5	Air	Filter/Solutions	None	6 Months
Sulfate	SM4500SO4/9036/ 9038/375.2/ASTMD516	Water	Plastic/Glass	≤6°C	28 Days
Sulfide, Reactive	SW-846 Chap.7	Water	Plastic/Glass	None	28 Days
Sulfide, Total	SM4500S/9030	Water	Plastic/Glass	pH>9 NaOH; ZnOAc; ≤6°C	7 Days
Sulfite	SM4500SO3	Water	Plastic/Glass	None	15 minutes
Surfactants	SM5540C	Water	Plastic/Glass	≤6°C	48 Hours
Total Organic Carbon (TOC)	SM5310B,C,D/ 9060	Water	Glass	pH<2 H_2SO_4 or HCl; ≤6°C	28 Days
Total Organic Halogen (TOX)	SM5320/9020/ 9021	Water	Glass; no headspace	≤6°C	14 Days
Tritium	906.0	Water	Glass	pH<2 HNO_3	180 days
Turbidity	SM2130B/180.1	Water	Plastic/Glass	≤6°C	48 Hours
Uranium Radiochemical Method	908.0/ASTM D5174-97	Water	Plastic/Glass	pH<2 HNO_3	180 days
Volatiles	TO-14	Air	Summa Canister	None	30 Days
Volatiles	TO-14	Air	Tedlar Bag	None	48 Hours
Volatiles	TO-15	Air	Summa Canister	None	30 Days
Volatiles	8260	Soil	5035 vial kit	See 5035 note*	14 days
Volatiles	8260	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Volatiles	624	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days (7 unpreserved)
Volatiles	524.1/524.2	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Alaska DRO	AK102	Soil	8oz Glass	≤6°C	14/40 Days
Alaska DRO	AK102	Water	1L Glass	pH<2 HCl; ≤6°C	14/40 Days
Alaska RRO	AK103	Soil	8oz Glass	≤6°C	14/40 Days
Alaska GRO	AK101	Soil	5035 vial kit	See 5035 note*	14 Days
Alaska GRO	AK101	Water	40mL vials	pH<2 HCl; ≤6°C	14 Days

5035 Note: 5035 vial kit typically contains 2 vials water, preserved by freezing **or**, 2 vials aqueous sodium bisulfate preserved at 4°C, **and** one vial methanol preserved at ≤6°C **and** one container of unpreserved sample stored at ≤6°C.

Attachment IV – HOLD TIMES AND CHLORINE CHECKS

Analyses with Hold Times < 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	
48 Hours	Nitrite (unpreserved)	
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

Analyses Requiring Residual Chlorine Verification

Analyses	Details
Ammonia (NH_3)	Nutrient Bottle
Nitrate (NO_3)	Nutrient Bottle
Total Kjeldahl Nitrogen (TKN)	Nutrient Bottle
Total Phosphorus (TP)	Nutrient Bottle
Nitrate (unpreserved)	Unpreserved Bottle
Cyanide	

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STANDARD OPERATING PROCEDURE

Waste Handling and Management

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CHR-S-002-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	S-CHR-S-002-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-S-002-rev.02

APPROVALS

Jeff Graham, Laboratory General Manager — Date 9/27/11

Cheryl Johnson, Laboratory Quality Manager — Date 9/22/2011

Cheryl Johnson, Laboratory Hazardous Waste Coordinator — Date 9/22/2011

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION	PAGE
1. Purpose	3
2. Scope and Application	3
3. Summary of Method	5
4. Interferences	5
5. Safety	5
6. Definitions	5
7. Sample Collection, Preservation, and Handling	8
8. Equipment and Supplies	8
9. Reagents and Standards	9
10. Calibration	9
11. Procedure	9
11.1. Generator EPA Identification Number	10
11.2. Waste Generation and Class	11
11.3. Waste Classification	11
11.4. Waste Streams	12
11.5. Waste Determination	12
11.6. Laboratory Generated Satellite Waste and Sample Disposal	14
11.7. Transferring Waste to Accumulation Area	15
11.8. Soil Samples	15
11.9. Elementary Neutralization	15
11.10. Waste Storage Container Requirements	16
11.11. Waste Documentation and Reporting	17
12. Quality Control	17
13. Method Performance	17
14. Pollution Prevention and Waste Management	18
15. References	18
16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.	18
17. Revisions	18

1. Purpose

1.1. Pace Analytical Services, Inc. (Pace) acknowledges its obligation to the responsible management of the environment and its resources. Pace Management is committed to operating in such a way that meets or exceeds the state and federal laws governing waste management and encourages the use of best practices to reduce, reuse and recycle waste material where possible. This Standard Operating Procedure (SOP) documents the systems, processes and procedures that Pace Charlotte uses to manage generated wastes.

1.2. It is Pace's policy to minimize the amount of hazardous waste it produces and to reduce the hazardous properties of those wastes whenever practical within regulatory compliance. This can be achieved by periodic auditing of all processes producing hazardous waste; reduction of sample volume delivered by the client; return of excess sample material to clients whenever practical and economical; investigation of new technologies that might require smaller volumes of sample, or produce fewer or less hazardous by-products; implementation of lab cleaning procedures that reduce the volume of cleaning residue; recycling of hazardous materials; and investigation of new treatment technologies that are comprehensively destructive or are effective in reducing the volume or hazardous qualities of the wastes produced.

2. Scope and Application

2.1. This SOP is applicable to all processes at Pace Charlotte that involve generated waste, and is designed to assist its operations in adhering to regulations set forth in the following federal statutes: Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), Toxic Substances Control Act (TSCA), and DOT Title 49, and Transportation (parts 100-199). Particular attention is given to local pretreatment standards covering discharges to publicly owned treatment works (POTW) when performing elementary neutralization on acidic and basic waste. The local standards are based in part upon provisions in the National Pretreatment Standards and Prohibited Discharge Standards.

2.2. The degree to which RCRA regulations apply to Pace facilities is dependent upon the generator status of the operation. Under the federal rules (state requirements may be more stringent or give the classes a slightly different name) there are three different classes of hazardous waste generators based upon the amount of waste generated in a month to month time frame.

Table 2.3. Waste Generator Class Limits

Hazardous Waste Generator Class	***Quantity of Hazardous Waste Generated per Month***	**Generated Monthly Acute Hazardous Waste**	**Maximum Allowable Hazardous Waste Quantity on-site**	**Maximum Permitted Waste Accumulation Time**
Cond. Exempt Small Quantity	*<100kg*	<1 kg	<1000kg	Unlimited
Small Quantity	*100-1000kg*	<1 kg	<6000kg	180 days (270 days if the waste must be sent >200 miles to TSDF)
Large Quantity	*>1000kg*	>1kg	Unlimited	90 days

Table 2.4. RCRA Requirements for Labs as a Function of Generator Status.

Requirement (40CFR)	CESQG	SQG	LQG
Waste Determination (262.11)	Applicable	Applicable	Applicable
Generation Rate Limits (261.5 and 262.34)	<100 kg/mo	100-1,000 kg/mo	1,000 kg/mo or greater
Accumulation Quantity Limit w/o Permit (261.5 and 262.34)	Not to exceed 1,000 kg at any time. Not to exceed 1 kg acute at any time	not to exceed 6,000 kg at any time	No limit
Accumulation Time (261.5 and 262.34)	No limit	180 days or 270 if waste is to be transported over 200 miles.	90 days
EPA ID Number (262.12)	Not required***; possible state requirement	Required	Required
Mark Containers with Start Date (262.34)	Not applicable	Applicable	Applicable
Mark Containers "Hazardous Waste" (262.34(a))	Not applicable	Applicable	Applicable
Air Emission Standards 40 CFR 265 Subpart CC	Not applicable	Not applicable	Applicable
Satellite Accumulation (262.34(c))	Not applicable	Applicable	Applicable
Use Manifests (262, Subpart B)	Not required; possible state requirement	Required	Required
Exception Reporting (262.42)	Not required	Required after 60 days. No TSDF notification requirement.	Required after 45 days. Notification of TSDF within 35 days.
Biennial Report (262.41)	Not required	Not required; possible state requirement	Required
Contingency Plan (265, Subpart D)	Not required, but OSHA (29 CFR 1910.38) requires emergency planning	Basic planning required in accordance with the standards in 262.34(d)(4) and (5) and 265, Subpart C as well as OSHA regulations	Full written plan in accordance with 265 Subpart D, is required by 262.34(a)(4) and OSHA regulations
RCRA Personnel Training (262.34 and 265.16)	Not required, but recommended	Basic training required by 262.34(d)(5)(iii)	Full compliance with the training requirements in 265.16 is required by 262.34(a)(4)
Storage Requirements (without permit) (262.34 and 265)	None, but OSHA regulations under 29 CFR 1910, Subparts H and N, apply, particularly 29 CFR 1910.106	Compliance with technical standards in Part 265, Subparts I and J; for containers and tanks is required by 262.34(d)(2) and (3) and OSHA regulations	Compliance with technical standards in Part 265, Subparts I, J, W, and DD, is required by 262.34(a)(1) and OSHA regulations
Recordkeeping Requirements (262.40)	Waste determinations and generation log required (notification of regulated waste activity, training records, manifests, and land disposal restriction notifications recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, and correspondence with local emergency responders (written contingency plan, weekly container inspection & periodic equipment maintenance logs, and RCRA training records recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, biennial reports, correspondence with local emergency responders, RCRA training records, and written contingency plan required (weekly container inspection is required & periodic equipment maintenance logs is recommended)
Waste "Designated Facility"	State-approved or RCRA permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler
Land Disposal Restrictions (268.7)	Possible state requirement	Applicable	Applicable

3. Summary of Method

3.1. Pace facilities that generate waste must initially contact the EPA to obtain an ID number. Each unique type of generated waste is classified and characterized into waste streams according to procedures in 40 CFR 261. The amount of waste the facility generates determines the Generator Status of a lab, which in turn determines how long and how much waste can accumulate. Pace Charlotte is ultimately responsible for the waste it generates, and is required obey any and all regulations during the process of creating, accumulating, disposing, and releasing waste to a TSDF for final disposal. Documentation is kept to prove all regulations have been obeyed.

4. Interferences

4.1. Not applicable to this SOP.

5. Safety

5.1. The laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A formal safety plan is also available to all employees. Gloves and eye protection should be routinely worn when handling reagents or samples. When qualified employees are transferring wastes, additional protection such as goggles, face shield, and lab apron are recommended.

5.2. MSDS sheets are located in a central location and should be consulted prior to handling samples and standards.

5.3. A hazard assessment must be completed per S-ALL-S-001 ***Hazard Assessments*** for waste areas to ensure proper PPE are utilized.

6. Definitions

6.1. Definitions of terms found in this SOP are described in the Pace Analytical Services Quality Manual, Glossary Section unless as noted below.

6.2. **Acutely Hazardous Waste** - A waste which is hazardous as identified with an (H) Hazard Code in the lists of Hazardous Waste in 40 CFR Part 261, Subpart D, Sections 261.30, 261.31 and 261.33.

6.3. **Clean Air Act** - The Federal Clean Air Act, 42 U.S.C. 7401, and amendments thereto amending 42 U.S.C. 1857 et.seq.

6.4. **Conditionally Exempt Small Quantity Generator** - A generator who produces no more than 100 kilograms of hazardous waste or one kilogram of acutely hazardous waste (or a total of 100 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar month. The total amount of hazardous waste which may be accumulated on-site is 1000 kilograms.

6.5. **Confined Space** – A space that is large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and is not designed for continuous employee occupancy.

6.6. **Container** - Any device material is stored, transported, treated, disposed of, or otherwise handled.

6.7. **Contingency Plan** - A document setting out an organized, planned, and coordinated course of action to be followed in case of fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

6.8. **Designated Hazardous Waste Storage Area** - Area used to hold hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere. This is the storage area into which hazardous waste from the laboratory (e.g., satellite waste) is moved.

6.9. **DOT** - The United States Department of Transportation.

6.10. **DTSC** – Department of Toxic Substances Control

6.11. **Elementary Neutralization Unit** – A device which: (1) is used for neutralizing wastes which are hazardous only because they exhibit the corrosivity characteristic defined in 40 CFR 261.22 or are listed in Subpart D of Part 261; and (2) meets the definition of tank, container, transport vehicle, or vessel in 40 CFR 260.10.

6.12. **EPA** - The United States Environmental Protection Agency.

6.13. **EPA Hazardous Waste Number** - The EPA number assigned to each EPA hazardous waste identified in 40 CFR Part 260, Subpart D - Lists of Hazardous Wastes.

6.14. **EPA Identification Number** - The site-specific number assigned to each generator, transporter, and TSDF upon approval of a notification form.

6.15. **Federal Clean Water Act** - 33 U.S.C. 1251, et. seq.

6.16. **Foreseeable Emergency** - Any fire, explosion, or sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water, which could threaten human health or the environment.

6.17. **Generator** - Any person, by site who owns or operates a facility where hazardous waste is generated, i.e. Pace Analytical Services (Pace).

6.18. **Hazardous Waste Coordinator** - The Pace employee responsible for creating, guiding, and implementing all hazardous waste management operations.

6.19. **Hazardous Waste** - As defined in 40 CFR Part 261, Subparts B and C, a solid, semi-solid, liquid or contained gaseous waste, or any combination of these wastes:

6.19.1. Which, because of either quantity, concentration, physical, chemical, or infectious characteristics may:

6.19.1.1. Cause or contribute to an increase in mortality or an increase in irreversible or incapacitating reversible illness; or

6.19.1.2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise mismanaged

6.19.2. Or which has been identified as having a characteristic of hazardous waste by the EPA using the criteria established under 40 CFR Part 261, Subpart C, or as listed under Sections 261.32, 261.32, and 261.33. Such wastes include, but are not limited to, those which are reactive, toxic, corrosive, ignitable, irritants, strong sensitizers or which generate pressure through decomposition, heat or other means. Such wastes do not include radioactive substances that are regulated by the Atomic Energy Act of 1954, as amended. A Waste is considered hazardous if it is listed or it fits into one of four categories. These categories are as follows:

6.19.2.1. Ignitable – (40CFR261.21, Waste Code D001) Having a flash point of less than 60°C/140°F.

6.19.2.2. Corrosive – (40CFR261.22, Waste Code D002) Having a pH of less than 2.0 or greater than 12.5.

6.19.2.3. Reactive – (40CFR261.23, Waste Code D003) Reactive wastes exhibit one or more of the following characteristics:

6.19.2.3.1. It is unstable and can undergo a violent change without detonating.

6.19.2.3.2. It can react violently with water.

6.19.2.3.3. When mixed with water it can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

6.19.2.3.4. It is cyanide or sulfide bearing waste that, when exposed to pH conditions between 2.0 and 12.5, can generate gases, vapors, or fumes that can present a danger to human health or the environment.

6.19.2.3.5. It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

6.19.2.3.6. It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

6.19.2.3.7. It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

6.19.2.4. EPToxic - A solid waste is EPToxic if, after being subjected to the EP Toxicity extraction, or TCLP analysis, the extract contains any of the listed contaminants in concentrations above the limits shown in Attachment 2. It is listed as a hazardous waste by the EPA (via 40 CFR 261.30, 261.31, 261.32, and 261.33).

6.20. **Hazardous Waste Constituent** - A substance, compound, or element listed as hazardous waste in EPA 40 CFR 261.

6.21. **Lab Pack Material** - A hazardous waste that does not match a listed Pace waste stream category.

6.22. **Large Quantity Generator** - Any generator who generates at a rate greater than 1000 kilograms of hazardous waste per month.

6.23. **Manifest** - As defined in 40 CFR Part 262, Subpart B, namely "the form used for identifying the origin, quantity composition, routing and destination of hazardous waste."

6.24. **Sample** - Except as provided below in 6.24.7, a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or composition, is not subject to any requirements of 40 CFR Part 261.5 or Parts 262 through 267 or Part 270 or Part 124 or to the notification requirements of Section 3010 of RCRA, when:

6.24.1. The sample is being transported to a laboratory for the purpose of testing; or

6.24.2. The sample is being transported back to the sample collector after testing; or

6.24.3. The sample is being stored by the sample collector before transport to a laboratory for testing; or

6.24.4. The sample is being stored in a laboratory before testing; or

6.24.5. The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

6.24.6. The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

6.24.7. In order to qualify for the exemption in 6.24.1 and 6.24.2 above, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

6.24.7.1. Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

6.24.7.2. Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

6.24.7.2.1. Assure that the following information accompanies the sample:

6.24.7.2.1.1. The sample collector's name, mailing address, and phone number;

6.24.7.2.1.2. The laboratory's name, mailing address, and phone number;

6.24.7.2.1.3. The quantity of the sample;

6.24.7.2.1.4. The date of shipment; and

6.24.7.2.1.5. A description of the sample.

6.24.7.2.2. Package the sample so that it does not leak, spill, or vaporize from its packaging.

6.24.7.2.3. This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in 6.22 above.

6.25. **Satellite Waste or Laboratory Satellite Waste** - Hazardous wastes created by Pace, as a result of organic or inorganic extractions, digestions, and analyses.

6.26. **Satellite Waste Container** - Any portable device used to accumulate laboratory generated waste prior to transfer to the hazardous waste storage area.

6.27. **Small Quantity Generator** - A generator who produces no more than 1000 kilograms of hazardous waste (or a total of 1000 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar monthly. The total amount of hazardous waste which may be accumulated on-site is 6000 kilograms.

6.28. **TSDF** - A Treatment/Storage/Disposal Facility.

6.29. **Universal Waste** – Commonly used items that are hazardous but can be recycled. These include fluorescent lights, computer monitors, etc.

6.30. **Waste Stream** - The generic profile of chemical and physical properties that satellite wastes exhibit.

7. Sample Collection, Preservation, and Handling

7.1. Not applicable to this SOP.

8. Equipment and Supplies

The following equipment is mandatory under RCRA guidelines unless otherwise denoted. Periodic review (not to exceed monthly) of availability of equipment and supplies below should be conducted to maintain an adequate and viable supply.

8.1. **Chemical Spill Control Neutralizers**: The waste room stores three types of bulk dry spill neutralizers: solvent, acid and base. They may be utilized by placing the dry neutralizer onto a liquid chemical spill. Neutralization is indicated by a prevalent color change.

8.2. **Communication Device**: Required for emergency notification of spill, fire, etc.

8.3. **Drums**: Common types of waste drums used for storing and shipping hazardous wastes are polyethylene, steel-polyethylene lined, and steel. Sizes are typically 5gal, 15gal, 30gal, and 55gal. Drums used for liquids typically are closed top with an opening to pour the solvent through a funnel, while drums used for solids or lab packs are open-top.

8.4. **Emergency Drench Shower**: Shower should deliver water approximately twenty gallons per minute with a non-interruptible flow. It may be turned on by pulling the shower handle down. It may be turned off by pushing the handle back to the 'off' position.

8.5. **Emergency Lighting** (as needed): The waste room is outfitted with emergency lighting that goes on if power fails.

8.6. **Exit Signs** (as needed): Exit signs are provided on all waste room doors. These signs are self-illuminating.

8.7. **Fire Alarm Pull Station**: A fire alarm pull station must be in close proximity to the hazardous waste room. The alarm may be activated by pulling the switch. Other alarm systems may be utilized as long as all personnel are trained on the procedures.

8.8. **Fire Extinguisher**: An extinguisher with a rating appropriate to the waste being stored in the area must be in close proximity to the hazardous waste room.

8.9. **Labels**: A multitude of labels are provided to ensure compliant labeling. They may be purchased or prepared manually.

8.10. **Liquid Chemical Neutralizers**: Liquid chemical neutralizers (base and acid) may be used to neutralize a contained hazardous liquid. This may be done by slowly adding the neutralizer to the liquid.

8.11. **Spill Control Pads**: Spill pads are used to soak up hazardous liquids. They do not neutralize spills. They are especially effective for cleaning up oily materials. Various pads are available for aqueous and petroleum based liquids.

8.12. **Spill Control Pillows**: Spill pillows may be used to soak up large amounts of liquid chemical spills. No neutralization occurs.

8.13. **Spill Dikes**: vary depending on the size and type of room: Their purpose is to encircle a spill, barring the spread of a hazardous chemical. They will also absorb liquids, but do not neutralize spills.

9. Reagents and Standards

9.1. Not applicable to this SOP.

10. Calibration

10.1. Not applicable to this SOP.

11. Procedure

11.1. All Pace facilities that generate hazardous waste must have a Generator's US EPA Identification Number. The ID number is obtained through the applicable EPA region's office by completing EPA form 8700-12, and must be completed before generating any hazardous waste.

11.1.1. Pace only utilizes transporters and treatment, storage, or disposal facilities (TSDFs) that have EPA identification numbers for hazardous waste handling and meet the TSDF transfer requirements.

11.1.2. A new ID number is necessary when changing locations as the number is tied to the facility address.

11.1.3. This facility's US EPA Identification Number is NCD986205086.

11.2. The laboratory generates wastes originating from several source types: materials and chemicals used to prepare and analyze samples (e.g., solvents, acids), unconsumed liquid and solid samples, certain types of batteries, mercury from lamps and broken thermometers and automobile waste. Unconsumed samples may include laboratory-contaminated sample residue (both liquid and soil) generated as part of digestion, extraction, etc., procedures used to prepare samples for analysis.

11.2.1. This facility is classified as a Small Quantity Generator.

11.3. Hazardous waste classification is the most critical step in establishing an effective, compliant waste-handling program. Laboratory wastes are classified using the criteria set forth under RCRA for ascertaining non-hazardous versus hazardous status, and this criterion is listed in the definition of hazardous waste in 6.19.

11.4. The following are the waste streams resulting from materials and chemicals used in the laboratory operation. Applicable information for each is given pertaining to packing, labeling, or listing on a manifest. A description of how the wastes are created, and the preferred method of final disposal for each, is included. The overriding principle in hazardous waste classification is application of a conservative formula based on all known or suspected hazards related to a waste material. While this formula may result in some materials being disposed as hazardous when in fact, they are non-hazardous (i.e., false positive), the formula will not be compromised in the interest of reducing the amount of waste produced. This will minimize any risk of a material being disposed of erroneously as non-hazardous when it, by definition, is a hazardous waste.

11.4.1. **Corrosive waste** is generated in the majority of the departments in the laboratory. This waste stream consists primarily of spent or excess aqueous reagent solutions generated from preservatives or other corrosive solutions generated in the course of analysis. The predominant corrosives include hydrochloric acid, nitric acid and sulfuric acid, but corrosives also include bases. Varying concentrations of metals may be present dependent upon the composition of the reagents added. This waste stream only has the hazardous quality of being corrosive; therefore, if a waste has any additional hazardous waste quality (i.e. Toxic or Ignitable) it cannot be mixed with this stream. This stream is treated onsite.

Corrosive Waste	
DOT Shipping Name	RQ Waste, Corrosive Liquid, N.O.S (i.e. corrosive material)
EPA Waste #	D002
Container	Glass sample containers
Average pH	<2.0, >12.5
Disposal Method	Treatment by Neutralization
Label	Corrosive

11.4.2. The **Chlorinated Waste Stream** consists primarily of methylene chloride with a very small amount of other organic solvents derived from extraction procedures performed on samples and from rinsing glassware. As a best practice, effort is made to have this waste stream as pure as possible in order to offer for recycling.

Chlorinated Solvents	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S (i.e. dichloromethane, acetone, methanol)
EPA Hazard Codes	F001

Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Chlorinated

11.4.3. The **Flammable Solvent Waste Stream** consists primarily of hexane, acetone, methanol, and used pump oil derived from extraction procedures performed on samples, rinsing glassware, and performing instrumentation maintenance. This waste stream must be strictly segregated from the chlorinated waste stream.

Flammable Solvent Waste	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S. (i.e. acetone, methanol)
EPA Waste #	D001, F003
Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Flammable

11.4.4. **Universal Waste Stream** includes mercury containing fluorescent light bulbs and used batteries and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Universal Waste Stream	
DOT Shipping Name	Universal Waste
EPA Waste #	Lab Pack
Container	Lab Pack
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Universal Waste

11.4.5. **Hazardous Soil Waste Stream** includes unused samples with methanol and sodium bisulfate preservation and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Hazardous Soil Waste Stream	
DOT Shipping Name	Hazardous Solid (methanol)
EPA Waste #	F003
Container	55 Gallon Drum
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Flammable

11.5. Some waste can become complicated when attempting to classify as non-hazardous or hazardous due to the list of hazardous constituents contained in sections 261.30, 261.31, 261.32, and 261.33 of 40 CFR including a majority of analytes of interest routinely analyzed in Pace laboratories. Definitions have been established for each of the F, K. P, and U lists covering hazardous waste originating from non-specific sources, specific sources and discarded commercial chemical products, off-specification species, container residues, and spill residues. The application of listed hazardous

wastes and substances is intended for manufacturing processes involving pure products, by-products, wastes generated as part of the production process and cleanup of materials contaminated from a spill of the listed commercial chemical product or manufacturing chemical intermediate. See Attachment I for common F-listed wastes.

11.5.1. Hazardous waste classification of unconsumed samples by listed hazardous waste criteria is not commonly applied in laboratory operations. Examples of sample types which would be identified as listed hazardous wastes include the following:

11.5.1.1. Samples containing 5% or more (by volume) of halogenated and non-halogenated "spent solvents:" (e.g., drum sample with > 10% TCE).

11.5.1.2. Pure product and two phase solution samples containing a listed chemical product or manufacturing intermediate (e.g., drum sample)

11.5.1.3. Samples from specific sources listed in section 261.32 (e.g., bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote and/or pentachlorophenol - K001).

11.5.1.4. Samples representing any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having a generic name listed in section 261.33, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in section 261.33.

11.5.2. For the wastes listed in 11.5.1.1 and 11.5.1.2, disposal can be achieved by individually lab packing them with other compatible hazardous wastes.

11.5.3. The remaining two sample types in 11.5.1.3 and 11.5.1.4 would also require lab packing for disposal. However, it is important to note that in order for the laboratory to ascertain that the samples were derived from a specific listed source or from a spill of a listed chemical, they must be so informed by the industrial concern or lead agency (e.g., EPA, state regulators) submitting the sample for analysis. If a water or soil sample contains a listed hazardous waste substance whose origin is unknown or uncertain to the lead agency, then that sample is not classified as a listed hazardous waste. Rather in this case, determination of a hazardous waste classification can only be obtained by the waste exhibiting a characteristic of hazardous waste (i.e., ignitability, corrosivity, reactivity, EP toxicity).

11.5.4. Due to the fact that the majority of samples analyzed by Pace do not meet the well-defined criteria for identifying "listed" hazardous waste, disposal classification of unconsumed samples will be based upon characteristics of hazardous waste.

11.5.4.1. Non-Hazardous - Analysis results indicate an absence of contaminants; unless contaminants listed under the hazardous disposal categories are parts of the requested sample analysis.

11.5.4.2. Hazardous – Analysis results indicate presence of contaminants (Attachment II) or sample analysis requires hazardous materials and contaminants. Samples in this category are segregated from others and disposed of as hazardous according to laboratory procedures.

11.5.4.3. PCB Waste - Generated exclusively by samples contaminated with greater than trace levels of polychlorinated biphenyls ($\geq$ 50 ppm). Samples containing 50 ppm (total) or higher of PCBs must be segregated and disposed of as PCB waste.

11.5.4.4. Waste Oil/Paint - Samples which are predominantly of an oil matrix (e.g., highly viscous organic liquid) or paint (solvent and pigment blend) are segregated and disposed in a separate container. Though these samples are defined as nonhazardous, oil samples are a special case and never disposed as nonhazardous.

Note: Bottle caps and liners do not typically contain sample residuals and can be disposed of directly through the non-hazardous building refuse.

11.5.5. USDA Regulated Soil is a special case of sample, and is strictly controlled under APHIS quarantine regulations 7 CFR 330 because it can readily provide a pathway for a variety of dangerous organisms into the United States. The movement of soil into the United States from foreign sources is prohibited, and movement within the continental U.S. (see Attachment III) is restricted unless authorized by APHIS under specific conditions or safeguards. The importation of soil from foreign sources and/or the interstate movement is authorized by APHIS solely under strictly controlled circumstances described in a permit and/or compliance agreement.

11.5.5.1. Any laboratory that plans to receive soil from a regulated area shown in Attachment III must first apply and receive a Soil Permit from the USDA.

11.5.5.2. All samples when received must be clearly marked as "USDA Regulated Soil" or some such marking to distinguish them from soils that are not from infested areas.

11.5.5.3. Any laboratory that receives soil from a foreign source or those shown in Attachment III, must either incinerate or autoclave any unconsumed samples and all apparatus used to handle the soil, including weigh boats, gloves, wooden spatulas, etc.

11.5.5.4. Refer to SOP CHR-L-005, current revision, for additional handling procedures.

11.6. Consolidation of wastes from the laboratory proceeds via two distinct routes covering either laboratory-generated hazardous wastes or excess unconsumed samples.

11.6.1. Laboratory Accumulation and Satellite Waste Containers

11.6.1.1. Waste materials from routine lab procedures are collected in containers of appropriate construction, placed in convenient locations at the point of generation. Under RCRA guidelines, these are defined as satellite containers.

11.6.1.2. The amount of hazardous waste stored in the laboratory at the individual satellite areas cannot exceed 55 gallons (liquid) or 550 lbs (solid) per waste stream, for non-acute hazardous waste.

11.6.1.3. Satellite waste containers must be labeled in accordance with OSHA regulations, including:

11.6.1.3.1. Designation of the contents to be hazardous waste with the words "Hazardous Waste" clearly legible

11.6.1.3.2. The waste stream description (e.g., acid waste)

11.6.1.3.3. A reference to area generating the waste (e.g., metals prep)

11.6.1.3.4. A hazard label (e.g., corrosive)

11.6.1.4. The satellite containers must be maintained such that evolution of chemical vapors is precluded. This requires that the container be closed at all times, except when adding or emptying hazardous waste to and from the container.

11.6.1.5. The most critical point in the waste handling system is when a person (e.g., analyst, technician) places a waste material into a satellite container. Here, the characteristics or listing of the waste and the waste stream must both be known to match. For this reason, only

material from approved procedures should be placed in the compatible satellite containers. All materials from experimental procedures, unknown or out of the ordinary sources, or from spill cleanups must be characterized and described to the Hazardous Waste Coordinator, who determines the proper method of disposal.

11.6.1.6. Full satellite containers must be transferred to the proper accumulation drum within 3 calendar days. Lab collection containers must not be filled to the top of the opening. Space must be left to prevent splashing of hazardous material when containers are emptied and to allow for expansion and contraction within the drum during transport.

11.6.1.7. Satellite containers must have secondary containment made of material that could successfully contain the entire satellite container's contents.

11.6.2. Unconsumed Sample Disposal

11.6.2.1. Samples which cannot be returned to the client for disposal must first be characterized in order to be processed for disposal.

11.6.2.2. Sample characterization is initiated at the time of final report generation by the individual signing the report (e.g., project manager). Samples are characterized by one of three methods

11.6.2.2.1. Analytical results are evaluated against characterization criteria established for the sample waste stream. The samples which exhibit waste characteristics as previously outlined are segregated and denoted per laboratory/facility policies. The completed form is then forwarded to the Hazardous Waste Coordinator, who in turn uses the information to coordinate removal of unconsumed samples from active sample storage by the log-in staff. OR:

11.6.2.2.2. Samples are scanned out of EPIC Pro (LIMS) as RCRA nonhazardous to be disposed as the waste stream is normally handled unless the sample tested over RCRA limits, in which EPIC Pro (LIMS) will prompt the employee that the sample is scheduled for Hazardous disposal, and is segregated from the nonhazardous samples. OR:

11.6.2.2.3. Samples of a certain type are all "assumed" to be hazardous, and all are placed into an accumulation drum with all required RCRA labeling for that waste stream.

11.6.2.3. Weekly, a Disposal Report by Sample is generated in EPIC Pro to facilitate the identification of samples designated as hazardous based on sample analysis. A sample custodian will attach a "LAB PACK" label to all samples identified as hazardous. Upon removal from the sample storage cooler, any sample labeled "LAB PACK" will be placed in the hazardous waste disposal area. The "LAB PACK" designated samples will be placed in a labeled drum. All "LAB PACK" designated samples will be disposed of by an approved waste disposal firm.

11.7. Transferring Satellite Waste to the Waste Storage/Accumulation Area

11.7.1. All transfers of satellite waste to waste drums must be made by the Hazardous Waste Coordinator or designated, trained personnel. When a satellite waste container is full, the Hazardous Waste Coordinator, or designee must be notified. Regular disposal events may be scheduled to dispose satellite waste on a continuous basis.

11.7.2. Find the correct waste drum by referring to the Hazardous Waste placard and hazard label. Mixing solvents that are not compatible could result in a hazardous reaction.

11.7.3. Ensure there is enough capacity in the drum to hold all the content that will be dispensed.

11.7.4. Check to make sure there is a ground connection before opening a solvent waste drum.

11.7.5. Open and slowly pour the contents of the satellite container into the proper waste drum using an appropriate solvent resistant funnel.

11.7.6. Replace the cap on the bunghole and carefully screw the cap on but do not tighten the cap.

11.8. Unconsumed Soil Samples

11.8.1. Non-hazardous soil samples will be consolidated in a drum for removal and incineration.

11.8.2. USDA regulated soils will be disposed of as described in section 11.5.5.4.

11.8.3. Hazardous soil samples will be disposed of as described in section 11.6.2.3.

11.9. Elementary Neutralization

11.9.1. Dilute corrosive solutions (e.g. preserved metals samples) which do not exhibit any hazardous characteristics other than being corrosive, may be neutralized. Elementary neutralization is exempt from RCRA permitting requirements for on-site hazardous waste treatment. While exempt under RCRA guidelines, before utilizing this practice to reduce off-site treatment or disposal of wastes, local pretreatment and discharge standards must be met for publicly owned treatment works (POTW).

11.9.2. The discharges listed below are prohibited under the National Pretreatment Standards and Prohibited Discharge Standards:

11.9.2.1. Pollutants causing fire or explosion (waste with a flashpoint < 60°C)

11.9.2.2. Corrosive wastes with pH less than 2 or greater than 12.5

11.9.2.3. Solid or viscous pollutants that could potentially block the system

11.9.2.4. Oxygen-demanding pollutants

11.9.2.5. Wastes which generate toxic gases

11.9.3. Non-hazardous water samples can be neutralized and disposed of via the sewer. A neutralization tank is attached to the sink drains. Fill the sink half-way with tap water. Pour several samples into the sink until it is about ¾ full. Drain and flush with copious amounts of tap water. The neutralization tank must be checked monthly and the pH adjusted to a pH greater than 5. Any empty sample glass containers should be crushed and disposed of by an approved waste disposal firm.

11.10. Waste Storage Container Requirements

11.10.1. Drums in the hazardous waste storage area are labeled consistent with both DOT and EPA regulations concerning hazardous materials and wastes (see Attachment IV for example of label).

11.10.2. Labels must be easily visible and legible (i.e., a drum must not be labeled and then placed in such a way that the label cannot be seen).

11.10.3. The Accumulation Start Date must be recorded on the drum. The date should reflect the first time waste was added to the drum and not the date when the waste was generated in the laboratory.

11.10.3.1. Once a waste is removed from the point of generation to a hazardous waste staging area, the clock is started for storage time prior to disposal.

11.10.3.2. Drums must be picked up by TSDF for disposal before accumulation time exceeds RCRA requirement for lab's generator status (see table 2.3).

11.10.4. One hazard label should be placed on the drum's top and another adjacent to the accumulation label.

11.10.5. The hazardous waste staging room must be arranged in such a fashion to assure direct access pathways in the event of foreseeable emergency. A minimum aisle space of three feet must be maintained at all times. Hazardous waste drums are to be stored in a manner that facilitates easy access both for filling and in case of an emergency. Drums are never stored more than two deep.

11.10.6. All hazardous waste drums and containers must be securely closed when not in use. All volatile and flammable hazardous waste liquid containers must be securely grounded at all times. Drums containing these liquids should also be manipulated with non-sparking tools and fitted with a drum venting bung, to assure that excess pressure build-ups are safely released.

11.10.7. All liquid waste stream containers must be provided with secondary containment devices. Such containment devices must be made of materials compatible with each waste, and they must be free of leaks. The waste storage room may act as secondary containment as long as the room has been constructed to safely and effectively contain a hazardous waste spill.

11.10.7.1. Secondary containers must exceed the total volume of the largest container stored in each containment device for indoor storage.

11.10.8. Compatibility of wastes must be considered in arranging storage areas. For example, acid waste should never be stored adjacent to basic waste, particularly cyanide wastes. Further examples are outlined in 40CFR264, Appendix V.

11.10.9. The hazardous waste staging area is controlled so unauthorized personnel are not able to access the room or contents.

11.10.10. The maximum volume of acutely hazardous waste (e.g., P-listed wastes) that can be accumulated in the laboratory is one quart. The volumetric measurement of one quart is based upon container size in which the waste is stored and not the actual amount (volume) of waste present. An example of how this one quart limit can inadvertently be exceeded involves the disposal of a neat standard of 2,4-dinitrophenol into a one gallon bottle. While the neat standard itself may only constitute 1-2mL, the volume as defined under RCRA would be one gallon, thus the laboratory would be out of compliance.

11.11. Waste Documentation and Reporting

11.11.1. All drums containing hazardous waste are recorded in a logbook or database. The information contained in this log is useful when filling out EPA biennial reports and for retaining an accurate description of how much waste has been accumulated. The following information is entered into the logbook/database:

11.11.1.1. The drum number.

11.11.1.2. The date filling the drum was started.

11.11.1.3. The drum capacity (e.g., 55-gallon, etc.).

11.11.1.4. The manifest number associated with the drum's disposal.

11.11.2. The following hazardous waste records must be maintained a minimum of five years and should be retained indefinitely:

11.11.2.1. Drum tracking logs.

11.11.2.2. Sample Reports.

11.11.2.3. Sample disposal information and waste records on computer disc.

11.11.2.4. Analytical records relating to sample waste stream profiling and characterization.

11.11.2.5. Labpack inventory logs.

11.11.2.6. Biennial Reports, Exception Reports, or other reports filed for compliance reasons.

11.11.2.7. Records related to unresolved enforcement action must be retained indefinitely until such a time that the matter is resolved.

11.11.2.8. Facility Certificates of Destruction or Recycling

11.11.3. A Waste Manifest is the documentation form that must accompany all shipments of hazardous waste while in transit.

11.11.3.1. The manifest is be signed and dated by a DOT trained Pace employee responsible for the shipment and the transporter. The transporter will leave one of these "two-signature page" copies of the manifest.

11.11.3.2. Within 35 days you will receive a three-signature page (generator, transporter, facility) showing the waste reached its intended destination. The waste coordinator is responsible to ensure it is filed in the Waste Manifests folder.

11.11.3.2.1. If you do not receive the three signature page within 35 days of shipment, call the facility to find out why you have not received it. If you do not receive the three-signature page within 60 days you must file an exception report with NC DENR Hazardous Waste Section.

11.11.3.3.. All manifests must be kept for a minimum of three years.

11.11.4. The central accumulation staging room must have a documented inspection weekly and satellite waste containers must have documented inspection as part of the monthly laboratory inspection. The inspections should ensure all regulations are obeyed; see 11.10 and 11.6.1 for accumulation storage and satellite rules, respectively.

11.11.4.1. A record of the inspections must be kept in an inspection log or summary.

11.11.4.2. Records must be maintained for at least three years from the date of inspection. At a minimum, the records must indicate:

11.11.4.2.1. The date and time of the inspection

11.11.4.2.2. The name and signature of the inspector (typically will be Hazardous Waste Coordinator)

11.11.4.2.3. A notation of the observations made (can be in a check-off format, e.g., fire extinguisher: charged _X_ requires recharging __)

11.11.4.2.4. The date and nature of any repairs or other remedial actions.

11.11.5. Annual Generation Reports are required to be filed with Agency that requires Annual Report:

11.11.5.1. Large Quantity Generators must file a biennial report with the local state or EPA Region.

12. Quality Control

12.1. Not applicable to this SOP.

13. Method Performance

13.1. Not applicable to this SOP.

14. Pollution Prevention and Waste Management

14.1 Not applicable to this SOP.

15. References

15.1. 40CFR261-268, Code of Federal Regulations Chapter 1, Subchapter I – Solid Waste.

15.2. 29CFR171-174, Code of Federal Regulations, Transportation.

15.3. Federal Plant Pest Regulations, Part 330.

15.4. Understanding the Hazardous Waste Rules, A Handbook for Small Business, 1996 Update, www.epa.gov/docs.

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I: Hazard Codes for Common F-List Wastes (solvents).

16.2. Attachment II: TCLP Contaminant List with Concentration Limits.

16.3. Attachment III: Soil Movement Regulations (Map).

16.4. Attachment IV: Hazardous Waste Label for Accumulation Drum (example).

16.5. Attachment V: Satellite Container Inspection Form

16.6. Attachment VI: Waste Accumulation Room Inspection Form

17. Revisions

Document Number	Reason for Change	Date
ALL-S-002-rev.0	First Issue	17Mar2005
	General: converted old SOP and EMM into an SOP Template (SOT). Removed MN address from header. Sections 1, 2.1, 3: reworded. Removed old section 2.3. Inserted new Table 2.4- RCRA Requirements for labs. Section 6: added definitions for DTSC and Universal Waste. Moved old Table 2 to Attachment II and changed reference in section 6.19.2.4. Removed old section 7 (Responsibilities). Section 8.1: removed sentence regarding SOP addenda. Section 8.4: reworded drum section to be more general. Added new section 11.1 (from old section 2.3). Added section 11.1.3: number entry is in editable red text. Added section 11.2.1: size of generator is in editable red text. Sections 11.4.1 thru 11.4.4: added these sections in red editable text so labs can enter information about their facility's waste streams. Section 11.5: added reference to Attachment I. Section 11.6.2.3: added in red text so labs can enter their method for sample disposal. Sections 11.7.1 and 11.10.7; reworded for clarity. Section 11.8: added in red text so labs can enter their method of segregating soils for USDA permit.	
SOT-ALL-S-002-rev.01	Section 11.9.3: added in red text so labs can enter their neutralization procedures. Added sections 11.11.2.6 – 11.11.2.8. Section 11.11.3: added red text so labs can enter procedure for maintaining waste documentation. Removed old section 11.11.5 (repeat information). Added new label in Attachment IV. Added new Attachments V and VI.	14Oct2009
SOT-ALL-S-002-rev.02	Removed old section 8.11- Over Pack Drums. Section 15.4: Added DoD reference.	04May2011
S-CHR-S-002-rev.02	Updated red text with local procedures	23July2011

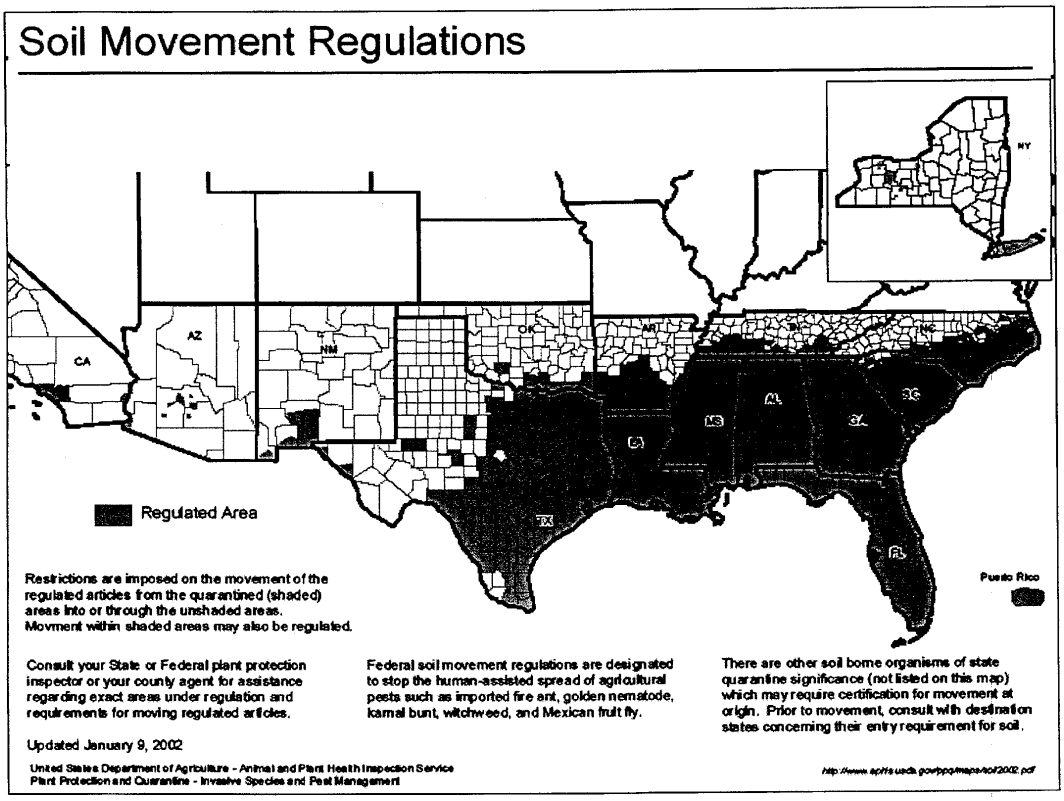
Attachment I: Common F-Listed Solvents

Waste Name	Hazardous Waste Code(s)	Waste Name	Hazardous Waste Code(s)
Acetone	F003	Methylene Chloride	F001, F002
Benzene	F005	Methyl ethyl ketone (MEK)	F005
iso-Butanol	F005	Methyl isobutyl ketone	F003
n-Butyl alcohol	F003	Nitrobenzene	F004
Carbon Disulfide	F005	2-Nitropropane	F005
Carbon Tetrachloride	F001	Orthodichlorobenzene	F002
Chlorobenzene	F002	Pyridine	F005
Chlorinated fluorocarbons (CFC)s	F001	Tetrachloroethylene	F001, F002
Cresols	F004	Toluene	F005
Cresylic acid	F004	1,1,1-Trichloroethane	F001, F002
Cyclohexanone	F003	1,1,2-Trichloeoethane	F002
2-Ethoxyethanol	F005	1,1,2-Trichloro-1,2,2-trifluoroethane	F002
Ethyl acetate	F003	Trichloroethylene	F001, F002
Ethyl benzene	F003	Trichloroflourormethane	F002
Ethyl ether	F003	Xylene	F003
Methanol	F003		

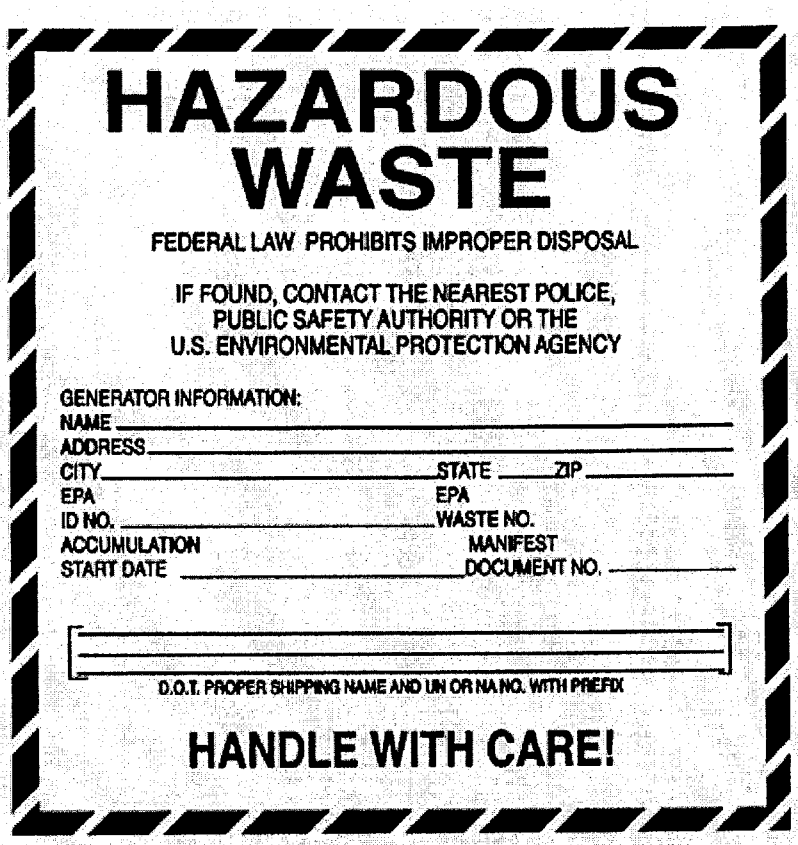
Attachment II: TCLP Contaminant List

Waste ID #	Contaminant	Conc (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP Silvex	1.0
D018	Benzene	0.5
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D031	Heptachlor	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D039	Tetrachloroethylene	0.7
D040	Trichlorethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D043	Vinyl Chloride	0.2

Attachment III: USDA Soil Movement Regulation Map



Attachment IV: Hazardous Waste Label for Accumulation Drum (Example)



Attachment V: Satellite Container Inspection Form

Waste Container ID	Properly Labeled	Label Legible	Secondary Containment	Closed when not in use	Inspection Date
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	

If any of the above fields are a "NO", please document how the deviance was brought back into compliance.

Comments: _____

_____

_____

Signature of Inspector: _____

Reviewed by: _____

Review Date: _____

ATTACHMENT VI: WASTE ACCUMULATION ROOM INSPECTION FORM

Containers closed when not in use	Labels Easily Seen and Legible	Drums have Accumulation Start Date	Storage Amounts and Limits Obeyed[1]	Secondary Containment	Adequate Aisle Space	Available Emergency Equip. and Materials	Signature and Date of Inspection	Corrective Action for NO Answers
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		

1: Accumulation limits are 90 days for LQG, and 180 days for SQG. SQG may have no more than 6000kg waste at any time.

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1162922

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																				
2																				
3	Example																			
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

JAN 2 6 2012

UST Hecl DOCKETING

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

Re: Required Revision to QAPP Contractor Addendum for Tier I
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567
Release Reported April 14, 2011
QAPP Contractor Addendum received January 17, 2012
E-Mail to Michael Clea dated January 19, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Quality Assurance Project Plan (QAPP) Contractor Addendum for the referenced facility and requests a clarification of the following Sections:

- In Section A6. on page 7 states "sampling the creek and wetlands (2 samples) plus the water tower (1 sample)." The number of samples is summarized in Section B2. Are we going to see surface run off from the ditch between Rhodesway North and Dollar General and along Jefferies (US Hwy 15) and Robertson Boulevard? Please mark on the site map or topographic map the approximate location where the two surface water samples will be collected. How will you sample the water tower? I did not see an explanation in section B2. Can groundwater from the UST facility impact water in the water tower? We ask that Drinking/Irrigation water wells to be sampled be listed in Section B2. Is there a public water supply well by the tower?
- In Section A6 on page 7 states "two soil borings shall be installed in the vicinity of the UST area;" The site plan indicates two UST basins on opposite sides of the facility. Will one soil sample be installed on each side of the building? The location of all borings needs to be marked on the site map.
- Section A6 on page 7 states "five soil borings shall be installed at the piping and dispenser area;" Will any of the borings be in the vicinity of GW-1 from the Site Report by ECS received September 14, 2011? Will three be installed along the gas lines and gas dispensers with two installed along the diesel product lines and diesel dispensers, or additional borings needed? The location of all borings needs to be marked on the site map.
- Where will the background boring be installed noted in Section A6? Please mark this location on the site map.
- Section A8 Training and Certificates in Table 3A and List of Labs on page 12 lists Shield Engineering as the Soil Lab that will conduct Grain Size Analyses/Hydrometer by ASTM D422. In both places the certification number is a UST Site Rehabilitation Contractor Number (UCC-0019). If Shield is doing on site UST site assessment as a sub of ECS, then the UST certification number is relevant. If Shield is doing a sieve/hydrometer test, the training for soil lab testing should be listed for a soil lab.

A revised Site Specific QAPP Contractor Addendum for Rhodesway North is due on or before February 10, 2012. On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708
Technical file

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

FEB 0 7 2012

JOE SALEMI
SALEMI/REDI WASH FAMILY LIMITED PARTNERSHIP
NORTHFIELD CENTER DEVELOPMENT CORPORATION
2 PLANTERS ROW
HILTON HEAD SC 29928-5504

Re: Letter of Concern for Adjacent Property
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit # 02567
Dollar General Store property located at 779 Robertson Boulevard, Walterboro, SC
E-mail Request received February 6, 2012

Dear Mr. Saleni:

In response to your request for information about environmental conditions and liability associated with the referenced facility and adjacent property, the following is provided.

Our records indicate that five Underground Storage Tanks (USTs) were registered with the Department by Rhodes Oil Company, Incorporated. The registered USTs are currently in operation. The Department last inspected the UST system on January 14, 2011 and found it to be in compliance with all applicable federal and state regulations. An assessment report received in April 2011 documented a release of petroleum products in the vicinity of the UST. Our records indicate that Rhodes Oil Company, Incorporated complied with the regulatory requirements and stopped the leak from the tanks. Additionally, they are currently pursuing the extent and severity of petroleum chemicals of concern under our direction. A plan for the initial assessment activities is due on or before February 10, 2012. A report of findings is due 60 days after the plan is approved.

This release of petroleum products from the USTs is qualified to receive funding under the conditions of the State Underground Petroleum Environmental Response Bank (SUPERB) Act after the $25,000 deductible is met. This means that reasonable costs up to $1,000,000 can be paid by the SUPERB account for site rehabilitation actions associated with this release. Should cleanup costs exceed $1,000,000, Rhodes Oil Company, Incorporated, under state and federal law, retains responsibility for any additional actions and associated costs.

Should the potential exist for petroleum chemicals of concern to migrate onto an adjacent property, the UST owner/operator and the Department may require access during reasonable hours to perform necessary rehabilitation activities. All rehabilitation activities associated with the petroleum impact are the responsibility of the Rhodes Oil Company, Incorporated. You should be aware that there are currently no laws or regulations that prohibit the use or development of adjacent properties and properties where a petroleum release has occurred.

If you have any questions, please do not hesitate to call me at (803) 896-6669 or contact me by e-mail at shradeaa@dhec.sc.gov.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

cc: Rhodes Oil Company, PO Box 1545, Walterboro, SC 29488
Environmental Compliance Services, PO Box 3528, Fort Mill, SC
Technical File

D H E C
PROMOTE PROTECT PROSPER

Shrader, Art A. <shradeaa@dhec.sc.gov>

Fwd: Walterboro Dollar General

4 messages

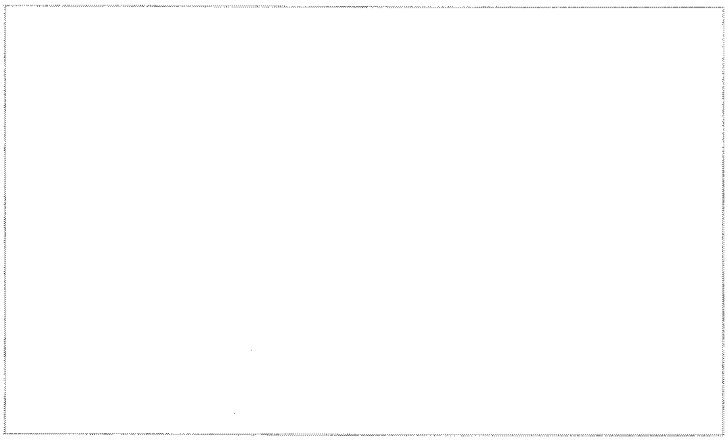
Miner, Read <minerrs@dhec.sc.gov> **Mon, Feb 6, 2012 at 1:51 PM**
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

---------- Forwarded message ----------
From: **Joe** <Joe@bouldercreekohio.com>
Date: Mon, Feb 6, 2012 at 1:17 PM
Subject: Walterboro Dollar General
To: "minerrs@dhec.sc.gov" <minerrs@dhec.sc.gov>

Reed,

Please accept this email as our request to have a letter of non enforcement on the property at 779 Robertson Blvd in Walterboro. The property is in the name of Salemi/Redi Wash Family Limited Partnership and Northfield Center Development Corporation.

Joe Salemi



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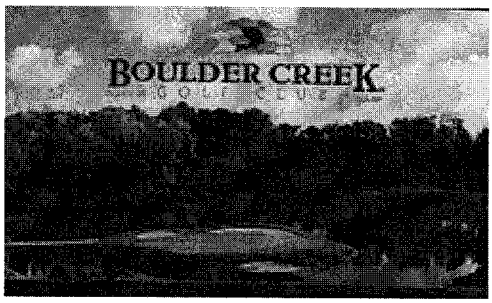


image001.jpg
16K

Shrader, Art A. <shradeaa@dhec.sc.gov> **Mon, Feb 6, 2012 at 2:14 PM**
To: Joe <Joe@bouldercreekohio.com>
Cc: "Miner, Read" <minerrs@dhec.sc.gov>, "Stamps, Jerry" <stampsjm@dhec.sc.gov>, Michael Clea <mclea@ecsconsult.com>

Joe,

Read Miner sent me your request for a letter for the Dollar General property adjacent to the Shell Station at 1400 Jefferies Highway in Walterboro (UST Permit # 02567). I am the Underground Storage Tank (UST) assessment project manager for the Shell Station and will be preparing the letter.

I understand the address for the Dollar General Store is 779 Robertson Boulevard in Walterboro.

Could you please provide me the full name and address where I should send a letter? I can send to a lender and copy you, Salemi/Redi Wash Family Limited Partnership, or Northfield Center Development Corporation.

Thanks

[Quoted text hidden]

--
Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land & Waste Management
tel: (803) 896-6669
fax: (803) 896-6245

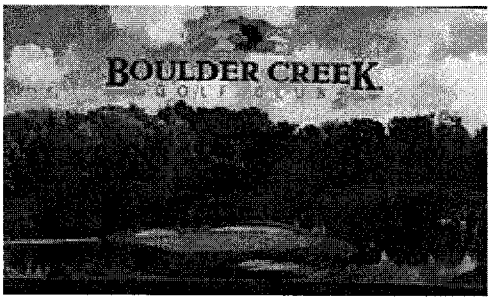


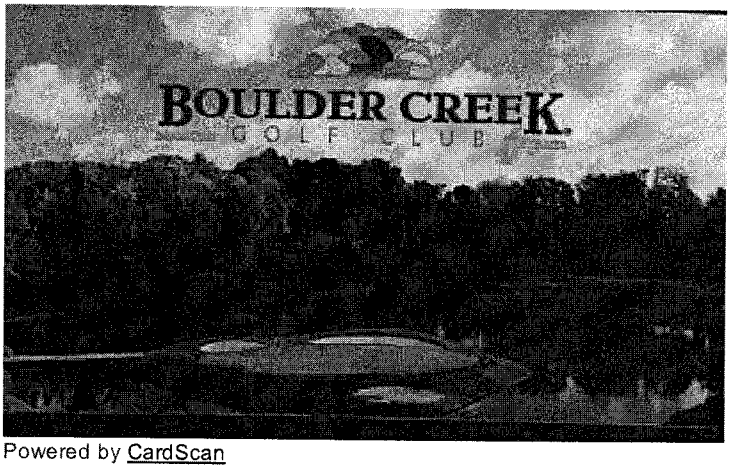
image001.jpg
16K

Joe <Joe@bouldercreekohio.com> **Mon, Feb 6, 2012 at 2:18 PM**
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

The property is held jointly in both companies names. You can email the letter or send it to ;

2 Planters Row

Hilton Head, SC 29928



Powered by CardScan

From: Shrader, Art A. [mailto:shradeaa@dhec.sc.gov]
Sent: Monday, February 06, 2012 2:14 PM
To: Joe
Cc: Miner, Read; Stamps, Jerry; Michael Clea
Subject: Fwd: Walterboro Dollar General

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Thanks

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Date: Mon, Feb 6, 2012 at 1:51 PM
Subject: Fwd: Walterboro Dollar General
To: "Shrader, Art A." <shradeaa@dhec.sc.gov>

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Date: Mon, Feb 6, 2012 at 1:17 PM
Subject: Walterboro Dollar General
To: "minerrs@dhec.sc.gov" <minerrs@dhec.sc.gov>

Reed,

Please accept this email as our request to have a letter of non enforcement on the property at 779 Robertson Blvd in Walterboro. The property is in the name of Salemi/Redi Wash Family Limited Partnership and Northfield Center Development Corporation.

Joe Salemi

Error! Filename not specified.
Powered by CardScan

--

Arthur Shrader, Hydrogeologist

Assessment Section

Underground Storage Tank Management Division

Bureau of Land & Waste Management

tel: (803) 896-6669

fax: (803) 896-6245

Shrader, Art A. <shradeaa@dhec.sc.gov> **Tue, Feb 7, 2012 at 8:43 AM**
To: Joe <Joe@bouldercreekohio.com>
Cc: "Miner, Read" <minerrs@dhec.sc.gov>, "Stamps, Jerry" <stampsjm@dhec.sc.gov>, Michael Clea <mclea@ecsconsult.com>

Joe,

Please find attached a copy of the letter you requested.

The original will go in the mail this morning.

Art Shrader
[Quoted text hidden]

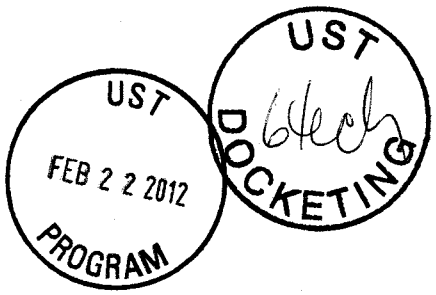
02567 Concern Adjacent Property.pdf
332K

ecs WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

13504 South Point Boulevard, Unit F, Charlotte, NC 28273 tel 704.583.2711 fax 704.583.2744 www.ecsconsult.com

02567

February 21, 2012



Mr. Arthur Shrader
South Carolina Department of Health
& Environmental Control
2600 Bull Street
Columbia, South Carolina 29201-1708

Dear Mr. Shrader:

Enclosed please find revised sections (Rev 1 pages) and updated signature page for the Quality Assurance Project Plan Addendum to the SC DHEC UST Programmatic QAPP For Rhodesway North; UST Permit #02567. If you have any questions, please contact me at (704) 583-2711. Thank You for your assistance on this matter. It is greatly appreciated.

Sincerely,

Micheal Clea, MESH, MBA.
Project Manager
Environmental Compliance Services, Inc.

Enclosures

Printed on recycled, carbon neutral paper

Appendix B: Contractor Addendum

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Rhodesway North; UST Permit #02567

1400 Jefferies Highway, Walterboro, SC

Prepared by:
Micheal Clea
Environmental Compliance Services, Inc.
13504 South Point Blvd, Ste F
Charlotte, NC 28273

Date: February 14, 2012
Certified UST Site Rehabilitation Contractor #358
Environmental Compliance Services, Inc.

Approvals:

Art Shrader
SC DHEC Project Manager
_____ Signature Date_____

Micheal Clea
Contractor Project Manager
Michael Clea Signature Date 2/16/12

Kurt Blevins
Site Rehabilitation Contractor
Kurt Blevins Signature Date 2/16/2012

Craig L. Kennedy, PG
Project Verifier/QA Manager
Signature Date 2/17/2012

for Jeff Graham
Laboratory Director
Cheryl Johnson Signature Date 2/16/2012

Larry Lewis
AES Laboratory Director
Allison A. Cantrell Digitally signed by Allison Cantrell DN: cn=Allison Cantrell, c=US, o=aes, ou=aes Date: 2012.02.16 12:45:48 -05'00' Signature Date_____

Joshua Slusarczyk
Shield Engineering Lab Director
Signature Date 2-16-12

A2 Table of Contents

Table of Contents

A1 Title and Approval Page 2
A2 Table of Contents 3
A3 Distribution List 4
Table 1A Addendum Distribution List 4
A4 Project Organization 5
Definitions of Project Roles 6
A5 Problem Definition/Background 6
A6 Project/Task Description 7
A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) 8
A8 Training and Certificates 9
Table 3A Required Training and Licenses 9
A9 Documents and Records 13
Table 4A Record Identification, Storage, and Disposal 13
Section B Measurement/Data Acquisition 14
B1 Sampling Process/Experimental Design 14
Table 5A Sampling Activities 14
B2 Sampling Methods 14
Table 6A Field Corrective Action 16
B3 Sample Handling and Custody 17
B4 Analytical Methods 19
Table 7A Analytical SOPs and Referenced Methods 19
Table 8A SOP Abbreviation Key 19
Table 9A Corrective Action Procedures 21
B5 Quality Control Requirements: 22
B6 Field Instrument and Equipment Testing, Inspection and Maintenance 22
Table 11A Instrument and Equipment Maintenance 23
Table 12A Instrument and Equipment Inspection 24
B7 Instrument Calibration and Frequency 24
Table 13A Instrument Calibration Criteria and Corrective Action 25
B8 Inspection/Acceptance Requirements for Supplies and Consumables 26
Table 14A List of Consumables and Acceptance Criteria 26
B9 Data Acquisition Requirements (Non-Direct Measurements) 27
B10 Data Management 28
Section C Assessment and Oversight 30
C1 Assessment and Response Actions 30
C2 Reports to Management 30
Section D Data Validation and Usability 30
QAPP APPENDIX B ATTACHMENTS 31

A3 Distribution List

Name	Title	Organization/Address	Telephone Number	Fax Number	Email Address
Art Shrader	SC DHEC Technical Project Manager	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Kurt Blevins	Site Rehabilitation Contractor	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Micheal Clea	Contractor Project Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Jeff Graham	Laboratory Director	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Larry Lewis	Laboratory Director	Analytical Environmental Services, Inc. 3785 Presidential Pkwy Atlanta, GA 30340	770-457-8177	770-457-8188	llewis@aesatlanta.com
Craig L. Kennedy, PG	Project Verifier/QA Manager	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com
Steve Taylor	Well Services/Driller	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853		staylor@gexnc.com
Joshua Slusarczyk	Laboratory Director	Shield Engineering, Inc. 4301 Taggart Creek Road Charlotte, NC 28208-5483	(800) 395-5220	(704) 394-6968	jslusarczyk @shieldengineering.com

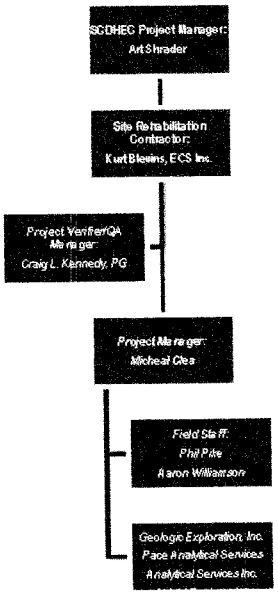
Table 1A Addendum Distribution List

A4 Project Organization

Role from the UST Master QAPP	Person in this Role for Project	Organization/Address	Telephone Number	Fax Number	Email Address
Project Manager	Art Shrader	SCDHEC, UST Management Division, 2600 Bull St., Columbia, SC, 29201	803-896-6669	803-896-6245	shradeaa@dhec.sc.gov
Site Rehabilitation Contractor	Kurt Blevins	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	kblevins@ecsconsult.com
Contractor Project Manager	Micheal Clea	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	mclea@ecsconsult.com
Well Services/Driller	Steve Taylor	Geologic Exploration Inc. 176 Commerce Blvd Statesville, NC 28625	800-752-8853	800-752-8853	staylor@gexnc.com
Analytical Laboratory Director	Jeff Graham	Pace Analytical Services 9800 Kincey Ave Suite 100 Huntersville, NC 28078	704-875-9092	704-875-9091	jeff.graham@pacelabs.com
Pace Subcontractor: Analytical Laboratory Director	Larry Lewis	Analytical Environmental Services, Inc. 3785 Presidential Pkwy Atlanta, GA 30340	770-457-8177	770-457-8188	llewis@aesatlanta.com
Project Verifier/QA Manager	Craig L. Kennedy, PG	ECS Inc. PO Box 3528 Fort Mill, SC 29708	800-627-0493	704-583-2744	ckennedy@ecsconsult.com

Table 2A Addendum Role Identification and Contact Information

Figure 1A Organizational Chart:



Definitions of Project Roles

Site Rehabilitation Contractor

Kurt Blevins is the local Branch Manager of ECS Inc and will be responsible for overseeing adherence to the site specific QAPP during all phases of work. The Site Rehabilitation Contractor is responsible for maintaining the original, approved QAPP.

Project QA Officer

The project QA Officer (Craig L. Kennedy, PG) provides review of field work, documentation of calibration for field instruments, lab data, and technical review of reports produced utilizing this data. The QA Officer will independently review data generated from this project and determine if the data meets QA/QC criteria as set forth in the SCDHEC UST Programmatic QAPP.

Project Manager

The Project Manager (Micheal Clea) will be responsible for work conducted during this scope of work and the primary point of contact. His duties will include development of the site specific QAPP, supervising field work, documenting and QA failures, determining corrective actions to QA failures, and preparing reports for submission to SCDHEC.

Field Staff

The contractor field staff will perform sampling and field activities per the QAPP document under the direction of the Project Manager. Field staff will be responsible for collection and sampling of related data and calibration of field instruments. The Project Manager in certain situations may also be a member of the Field Staff.

A5 Problem Definition/Background

Discuss the background (as much as is known) of the site and appropriate historical information, and why this site is being assessed.

The site is located at the intersection of N. Jeffries Boulevard (US Highway 15) and Robertson Blvd. The site currently operates as a petroleum retail facility and convenience store. The site consists of an approximated 2,000 square foot building constructed prior to 1994. A 2,680 square foot canopy and a 2,380 square foot canopy were located on opposite sides of the building. According to UST Registry, a release from the UST system had not been reported for this site prior to April 2011. On 3/16/2011 ECS representatives performed a Site Check of the retail facility.

As part of the Site Check, a temporary well was advanced in grassy area located between the UST system and adjacent property (Dollar General). A petroleum odor was detected from hand augered soil cuttings between 4 ft and 9 ft. A groundwater sample was collected and delivered to a South Carolina certified analytical laboratory following standard chain of custody procedures. Analyses were performed for BTEX and naphthalene using EPA Method 8260 and PAHs by EPA Method 8270. The laboratory results indicated that groundwater concentrations of BTEX, and Naphthalene in the area near the UST basin are above the SCDHEC RBSLs. The purpose of

the Tier I investigation is to determine the risk the release may pose to human health and the environment.

Please answer the following: Does this project fall under UST or Brownfields area?

Yes, UST Area.

A6 Project/Task Description

1. ***Summarize what is known about the work to be done. This can be a short sentence indicating what the Scope of this project is (see Master QAPP Section A6).***

   A Tier I investigation shall be performed on site to determine the risk the referenced release may pose to human health and the environment. In Section B (Tier I Sampling Process Design) of Revision 1 of the *Programmatic QAPP* dated June 2011, the UST Program indicates two soil borings shall be installed in the vicinity of the UST area; five soil borings shall be installed at the piping and dispenser area; and one soil boring at least 30 feet away from UST system. Based on this information, two soil borings shall be installed at the diesel UST basin; five soil borings shall be installed in the vicinity of the diesel dispensers and piping; and, one soil boring will be installed at least 30 feet or more away from the UST system. No additional soil borings or additional soil boring footage will be anticipated for completion of this Tier I. Also from the Tier I Sampling Process Design, three monitoring wells shall be installed at the site. For completion of this Tier I, one well will be installed in the immediate location of the soil boring that exhibited the highest field-screening concentration.; one well will be installed in the location of the background soil boring (at least 30 feet away from UST system); and, one well will be installed in a position on the site so that the direction of groundwater flow can be determined. Additionally from the Tier I Sampling Process Design, if receptors are identified that may be impacted; they shall be immediately screened for hydrocarbons using a properly calibrated organic vapor analyzer or other similar screening device. No water supply wells have been identified within a 500-foot radius of the site. Mapped wetlands were located within 275 feet to the northeast of the site. An unnamed Tributary to Ireland Creek is also located within 300 feet to the northeast of site. Based on this information, if surface water is present at the time of the Tier 1, samples will be collected from these receptors. The required field-screening and lab data for these receptors shall be included in the Report.

2. ***The work will begin within Approximately One Month after cost approval and the Tier I (including report) should be complete (and submitted) within approximately 60 to 90 days (depending on due date) after cost approval receipt by ECS, Inc.***

3. ***Are there time or resource constraints? Include those factors that may interfere with the tentative schedule.***

   Potential issues may arise from inclement weather, access issues, unpredicted site or equipment problems or schedule conflicts.

A7 Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs)

Detail the geographical area that is to be part of the project. Maps should be included to show not only the topography and the geographical area of the State, but also to show more detail of the site itself including property lines.

The site is located in the Coastal Plain region of South Carolina. According to Newcombe (1989), near surface sediments consist of Pliocene- to Holocene-age undifferentiated sand, silt and clay of alluvial origin, representing terrace deposits of relict shorelines. The study area lies within the floodplain of the Ashepoo, Combahee and Edisto Rivers. The depositional setting of the area has been termed "transitional" from the alluvial, upper deltaic plain to the northwest, to the proximal marine and marine environments to the southeast. In this portion of the Coastal Plain, surficial sediments range in thickness from less than 50 to approximately 400 feet. Underlying the surficial sediments is the Cooper Formation, an equivalent to the upper portions of the Floridan Aquifer (Ocala Limestone), which is an important source of groundwater in the eastern Coastal Plain. The limestone overlies the Black Mingo Formation, a Paleocene-age limestone mixed with sub-equal portions of sand and clay. The Black Mingo Formation is also used for public water supply wells where it is found with the Floridan equivalents. Below the Black Mingo Formation are the Cretaceous aquifers. In the study area, these units are, in ascending order, the Cape Fear Formation, the Middendorf Formation and the Black Creek Formation. All three water-bearing units are semi-confined in the region, with the Black Creek Formation being the principal groundwater source for the study area. These Cretaceous units range in thickness from 500 feet to over 1,000 feet, and lie unconformably over pre-Cretaceous crystalline bedrock.

The Pliocene- to Holocene-age undifferentiated sands, silts and clays comprise the surficial aquifer in central Colleton County. These units are minor sources of water for agricultural and residential irrigation but generally do not supply potable water for domestic use. The Black Mingo and Cooper Formations, and to a lesser extent the Cretaceous aquifers, are the main sources of drinking water for the region. Recharge of the upper water-bearing unit, the Ocala Limestone, occurs from rainfall and surface runoff in areas where it outcrops. The lower Cretaceous units are recharged in their respective outcrop areas located to the northwest. In the study area, the base of freshwater has been estimated at 2,000 feet below sea level.

See attached **Figure 1** for topographic information. A Site Plan is included as **Figure 2.**

A8 Training and Certificates

Required training and licenses:

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Project Manager	Micheal Clea	40 Hr HAZWOPER & Refresher	40 Hr: 1996 Refresher: Dec 2011	-	-
Project Verifier/ QA Manager	Craig L. Kennedy, PG	40 Hr HAZWOPER & Refresher	40 Hr: 1995 Refresher: February 2011	PG	2425
Field Staff	Phil Pike	40 Hr HAZWOPER & Refresher	40 Hr: 1990 Refresher: July 2011	-	-
Field Staff	Aaron Williamson	40 Hr HAZWOPER & Refresher	40 Hr: 2009 Refresher: July 2011	-	-
Pace Lab Manager	Jeff Graham	BS Chemistry	May 1984	Lab Certification	SC 9900601
Shield Engineering Lab Manager	Joshua Slusarczyk	BS Civil Engineering Technology	December 2008	Lab Certification	UCC-0019
AES Lab Manager	Larry Lewis	Lab Certification	Various dates for various Method Certifications	Lab Certification	98016003
Professional Surveyor	Jay Joshi			PLS	14811

Table 3A Required Training and Licenses

Kurt Blevins of **ECS, Inc.** is responsible for ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location: **588 Silver St, Agawam, MA**.

Title/Job	Name	Training Required	Date training received	Type of License	License Number
Well Driller	Jonathan Burr	Continuing Ed.		Well Driller	1740
Well Driller	Vincent Federle	Continuing Ed.		Well Driller	1930
Well Driller	Mark Gettys	Continuing Ed.		Well Driller	1086
Well Driller	Nicholas Hayes	Continuing Ed.		Well Driller	1983
Well Driller	James Hess	Continuing Ed.		Well Driller	1929
Well Driller	Jason Mantak	Continuing Ed.		Well Driller	1494
Well Driller	Michael McConahey	Continuing Ed.		Well Driller	1276
Well Driller	Daniel Summers	Continuing Ed.		Well Driller	1430
Well Driller	Jerry Watkins	Continuing Ed.		Well Driller	1979

Steve Taylor of **Geologic Exploration Inc.** is responsible to ensuring that personnel participating in this project receive the proper training. All training records will be stored in the following location:
176 Commerce Blvd, Statesville, NC 28625.

It is understood that training records will be produced if requested by SC DHEC.

The Following Laboratory(ies) will be used for this Project:

Commercial Lab(s)

Full Name of the Laboratory: Pace Analytical Services, Inc.-Huntersville
Name of Lab Director: Jeff Graham
SC DHEC Certification Number: 9900601
Parameters this Lab will analyze for this project:

Soil:

Benzene, toluene, ethylbenzene, and total xylenes (BTEX), Naphthalene, and methyl tertiary butyl ether (MTBE)by EPA Method 8260B with Preparation 5035;
and, Benzo(a)anthracene, benzo(b)flouranthene, benzo(k)flouranthene, chrysene, dibenz(a,h)anthracene (PAHs) by EPA Method 8270D with Preparation 3546.

Groundwater:

BTEX, total naphthalenes, 1,2-dichloroethane (1,2-DCA), and MTBE by EPA Method 8260B with Preparation 5030;
Ethylene dibromide (EDB) by EPA Method 8011; and,
PAHs by EPA Method 8270D with Preparation 3510C;

Full Name of the Laboratory: Pace Analytical Services, Inc,- Asheville
Name of Lab Director: C B Johnson
SC DHEC Certification Number: 9903001
Parameters this Lab will analyze for this project:

Soil:

Total organic carbon (TOC) by EPA Method 9060A

Groundwater:

Total & Dissolved Lead by EPA Method 6010C, 6020A, or 7010

Full Name of the Laboratory: Shield Engineering, Inc.
Name of Lab Director: Joshua Slusarczyk
SC DHEC Certification Number: UCC-0019
Parameters this Lab will analyze for this project:

Soil:

Grain Size Analysis/Hydrometer by ASTM D422

Full Name of the Laboratory: Analytical Environmental Services, Inc.
Name of Lab Director: Larry Lewis
SC DHEC Certification Number: 98016003
Parameters this Lab will analyze for this project:

Soil:

Total Petroleum Hydrocarbons – Diesel Range Organics (TPH-DRO) by EPA Method 8015C with Preparation 3550C

Please note: SC DHEC may require that the contractor submit some or all of the Laboratory's SOPs as part of this QAPP.

A9 Documents and Records

Personnel will receive the most current version of the QAPP Addendum via: (Check all that apply)

X US Mail X Courier X Hand delivered

Other (please specify): Email if accepted by SCDHEC Project Manager

Record	Produced By	Hardcopy/ Electronic	Storage Location For how long?	Archival
Laboratory Instrument Raw Data	Target software	Electronic	To Disc –offsite storage for 5 yrs	Yes
Laboratory Final Reports	LIMS	Electronic	Tape backup – offsite storage for 5 years	Yes
Field Measurements	ECS, Inc.	Hard Copy: Field Book Electronic: PDF File	Hard Copy & PDF File: ≥5yrs	Yes
Well Construction Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Well Abandonment Records	Geologic Exploration, Inc.	Hard Copy	GEX Storage Facility: ≥5yrs	Yes
Waste Manifests	Transporter/Disposal Facility	Hard Copy & Electronic Copy	Transporter/Disposal Facility: ≥5yrs	Yes
Tier I Report	ECS, Inc.	Hard Copy & Electronic	≥5yrs	Yes

Table 4A Record Identification, Storage, and Disposal

Section B Measurement/Data Acquisition

B1 Sampling Process/Experimental Design

Item	Start Date	End Date	Comments
IGWA	-	-	Not Applicable For This Project
Tier I Assessment	Within approx. 30 Days of CA receipt	Within approx. 60 to 90 Days after receipt of CA	End Date depends on Due Date provided by SCDHEC Project Manager
Tier II Assessment	-	-	Not Applicable For This Project
AFVR	-	-	Not Applicable For This Project
MW Installation	-	-	Not Applicable For This Project
Monitoring Well Sampling Event	-	-	-

Table 5A Sampling Activities

B2 Sampling Methods

Please note: The contractor must follow sampling protocols as given in the UST QAPP.

***Estimate* the number of samples of each matrix that are expected to be collected:**

Soil — 14 (includes 8 soil borings, 3 soils during well install, and 3 for Trip, Field Blanks & Duplicate)

Ground Water from monitoring wells — 6 (includes 3 new wells, and 3 for Trip & Field Blanks and Duplicates)

From Drinking/Irrigation water wells — 0

From surface water features — 2

Total number of Water samples — 8 (includes Trip & Field Blanks and Duplicates)

The samples will be (check as many as apply): ____Homogenized ____Split

For the sample matrices indicated above, please describe how samples will be collected and the equipment needed.

Decontaminated stainless steel hand augers shall be used to collect shallow subsurface samples (≤5 feet). Typically, 4-inch auger-buckets with cutting heads are pushed and twisted into the ground, then removed as the buckets are filled. Deeper soil sampling will be accomplished using power equipment, such as a Geoprobe. The Geoprobe will utilize the Macro-Core Soil Sampler

for soil sample collection. The Macro-Core Soil Sampler includes a light-weight center rod, sample tube, liner and direct push device for collecting discrete interval samples of unconsolidated materials at depth. The liners range in length size between 36 inches, 48 inches, and 60 inches and each has an approximate 1.375-inch outside diameter.

Groundwater samples will be collected by using new disposable polyethylene bailers.

Please see attached ECS SOP 4.00 General Sampling Procedures for Aqueous & Solid Matrices.

Will Sampling Equipment have to be cleaned and decontaminated or is everything disposable?
Soil samples shall be collected and jarred while wearing nitrile gloves. Sterile soil sampling jars shall be made of glass and provided by the subcontracted laboratory.

Groundwater samples will be collected using disposable bailers. Nitrile gloves will be worn by field staff and changed between tasks and locations. The disposable sampling equipment and gloves will be disposed as solid waste at a municipal facility.

Specific Sampling Equipment Quality Assurance Techniques as detailed in Appendix H of the SCDHEC Programmatic QAPP shall be followed during all site activities.

If sampling equipment must be cleaned please give a detailed description of how this is done and the disposal of by-products from the cleaning and decontamination.
Stainless steel hand auger and Macro-Core Soil Sampler will be cleaned with tap water and soap, using a brush if necessary, to remove particulate matter and surface films. Steam cleaning (high pressure hot water with soap) may be necessary to remove matter that is difficult to remove with the brush. Augers that are steam cleaned should be placed on racks or saw horses at least two feet aboveground. Rinse thoroughly with tap water. Allow to air dry.

Groundwater water quality readings will be collected using a multi-parameter water quality meter (as discussed in Section B-6). The water quality meter and water level meter will be cleaned between sample points with a solution of alconox and deionized water and rinsed with deionized water.

Decontamination water will be containerized with purge water in properly labeled; DOT approved 55-gallon drums and disposed as non-hazardous waste at an approved facility.

Investigative Derived Wastes shall be placed in a 55 gallon drum, labeled with the proper labeling (Non-hazardous or Hazardous) following RCRA regulations and left onsite to be picked up by A&D Environmental Services.

Identify any equipment and support facilities needed. This may include such things as Fed-ex to ship the samples, a Geoprobe, field analysis done by another contractor (who must be certified), and electricity to run sampling equipment.

The following drilling equipment shall be utilize and maintained by Geologic Exploration Inc. for field screening and monitoring well installation purposes: Geoprobe 7822DT, Geoprobe 7822DT, Geoprobe 6620DT, Diedrich D-120 (truck mounted), DrillMax 2400, Mobil B-58 (truck mounted), Diedrich D-120 (atv), Drilltech D25KW.

Investigative Derived Wastes (soil & water) shall be received by A&D Environmental Services.

The samples shall be delivered to the Pace lab by the subcontracted laboratory's courier service. Subcontracted lab samples will be picked up by the subcontracted lab's courier service. ECS, Inc. is not responsible for delivery of samples between contracted laboratories.

Address the actions to be taken when problems occur in the field, and the person responsible for taking corrective action and how the corrective action will be documented.

Failure	Response	Documentation	Individual Responsible
Drilling Equipment failure	Contact Steve Taylor	Note problem schedule date to remobilize to site.	Drilling supervisor
Horiba Water Quality Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff
Purge Pump Failure	Use Hand bailing Method	Sampling sheet & Report	Field Staff
Water Level Meter Fails	Use Back up meter	Change serial number on sampling sheets	Field Staff

Table 6A Field Corrective Action

B3 Sample Handling and Custody

1. How will the samples get from the Site to the Lab to ensure holding requirements are met?

Samples shall be submitted to the lab from the site by the following procedures:

1) Samples shall be brought back to the office and kept cold in a sample storage refrigerator until they are picked up within the following business day by the laboratory's courier service.

Chain of Custody procedures shall be properly followed for each delivery scenario.

2. How will the contactors cool the samples and keep the samples cool?

Samples shall be stored in a secured, thermally insulated container with ice until transferred to a dedicated and secured sample storage refrigerator. Each cooler will contain sufficient ice to ensure that a 4°C temperature is maintained and will be packed in a manner to prevent damage to the sample containers. The grain size/hydrometer soil sample collected in the field will not be separated from other soil samples collected for lab analysis until container reaches laboratory.

3. How will the lab determine the temperature of the samples upon receipt? Will they be using a temperature blank?

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. The laboratory personnel will open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottles using the infrared (IR) thermometer gun.

4. ***Where will the samples be stored in the Lab once they are received?***

The procedures in the most recent revision of SOP S-CAR-C-001, Sample Management are used. Once logged in and labeled, samples are place in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below.

Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.

Soil and other solid samples received preserved with a stir bar, or deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.

Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:

The 5g aliquot is preserved with a stir bar, 5mL of deionized water and a stir bar, or 5mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or

Within 48 hours of collection in the field, the 5g aliquot must be immediately extracted with 5mL of methanol and stored in a segregated volatiles cooler until analysis, or

Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Mercury or Hexavalent Chromium analysis is needed. If Mercury or Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler. Samples requiring low level mercury analysis by Method 1631 are taken to the clean room for preservation and ambient storage.

5. ***Describe the chain of custody procedure and attach a copy of each chain of custody that will be used. If a Chain of Custody SOP exists from the Lab and the Contractor is willing to adhere to it, then this may be attached.***

Laboratory Chain of Custody procedures are outlined in the most recent revision of SOP S-CAR-C-001, Sample Management.

A Chain of Custody shall be completed according to the attached Instructions for Completing a CoC. Samples shall be disposed of using proper procedures by laboratory personnel. ECS, Inc. is not responsible for laboratory sample disposal.

Soil disposal by laboratories: All soils are disposed at an off-site landfill. Soils that are contaminated are placed in a 230 degree Fahrenheit oven for 16 hours then are disposed of in the area where they were collected from.

See attached laboratory Chain of Custodies.

B4 Analytical Methods

1. ***Identify the SOPs which will be used to analyze the samples, the method which the SOP references and the equipment or instrumentation that is needed:***

Parameter	SOP ID*	Method Referenced	Equipment	Comments
8260	S-CAR-0-023	8260B	Purge and Trap Mass Spectrometer System	
8011	S-CAR-O-020	8011	GC ECD	
8270	S-CAR-O-015	8270D	Direct Inject Mass Spectrometer System	
8270 SIM PAH	S-CAR-O-052	8270D	Direct Inject Mass Spectrometer System	
Lead	S-ASV-I-043	EPA 6010C	ICP Varian ICP Thermo Elemental	
TPH-DRO	sub			
TOC	sub			
Grain Size	S-5	ASTM D422	Sieves Oven Scale	
Hydrometer	S-6	ASTM D422	Sieves Oven Scale 1000mL Cylinder Hydrometer Thermometer	

Table 7A Analytical SOPs and Referenced Methods

- **This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

Abbreviation	Lab Identification of this SOP	Full Name of the SOP
S-CAR-O-023	S-CAR-O-023-rev.08	Determination of Volatile Organic Compounds by GC/MS
S-CAR-O-020	S-CAR-O-020-rev.05	Determination of EDB, DBCP and TCP in Water by Microextraction
S-CAR-O-015	S-CAR-O-015-rev.05	Determination of Semi-Volatile Organic Compounds in Aqueous, Solid or Waste Samples by GC/MS
S-CAR-O-052	S-CAR-O-052-rev.2	Determination of Semivolatile Organics by GC/MS-SIM, Selective Ion Monitoring
S-ASV-I-043	S-ASV-I-043-Rev.02	DETERMINATION OF METALS BY INDUCTIVELY COUPLED PLASMA (ICP) SPECTROSCOPY BY SW-846 6010C
S-ASV-I-58	S-ASV-I-58-Rev.00	Ion Chromatography
S-ASV-I-021	S-ASV-I-021-Rev.01	The Determination of Nitrate-Nitrite Nitrogen by Automated Colorimetry
S-ASV-M-020	S-ASV-M-020-Rev.03	Mercury by Cold Vapor for Waters and Solids
S-5	Grain Size	S-5 Grain Size ASTM D422
S-6	Hydrometer	S-5 Hydrometer ASTM D422

Table 8A SOP Abbreviation Key

2. Identify procedures to follow when failures occur, identify the individual responsible for corrective action and appropriate documentation:

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Equipment check	Equipment failure	Contact Steve Taylor	Note problem, schedule date to remobilize to site.	Drilling supervisor
Method Blank, one per batch of 20 samples	If hits in Method Blank	Samples with hits above reporting limit are reextracted or reanalyzed. Samples with hits less than reporting limit are reported and the method blank is qualified. Samples with hits more than 10x the hit in the MB maybe footnoted with a B-flag	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Method Blank, one per batch of 20 samples	If Surrogates outside of control limits	All samples reextracted or reanalyzed if surrogate recovery is below control limits. Samples are reported and MB is footnoted if surrogate recovery is above control limits	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedances.	If LCS analyte recoveries are above control limits, samples with a hit for the failing analyte above the reporting limit are reextracted or analyzed. If LCS analyte recoveries are below control limits, all samples are reextracted or reanalyzed. If LCS analyte recoveries are above control limits, samples without a hit for the failing analyte above the reporting limit are footnoted and reported. Samples may be reported if there is an acceptable matrix spike (where allowable) or laboratory control sample duplicate associated and the LCS is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	If RPD outside control limits	Samples are reported and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Laboratory Control Sample Duplicate, when needed	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Corrective actions are the same as Laboratory Control Sample. Samples are reported if LCS is acceptable and LCSD is footnoted	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor

Quality Control	Failure	Response	Documented Where?	Individual Responsible
Matrix Spike, one per batch of 20 samples	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	RPD outside control limits	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Matrix Spike Duplicate, when requiered	For any analytes outside of control limits or if the number of analytes outside control limits is over allowable number of exceedance.	Matrix spike duplicate is footnoted and samples are reported	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
Surrogates, all samples	If Surrogates outside control limits	If surrogate recovery is high and samples are non-detected samples are reported with qualification. If surrogate recoveries are low samples are re-extracted or reanalyzed.	Batch data, LIMS, Run logs.	Analyst, Peer Review, Supervisor
All Samples	Lost Samples	SCDHEC will be notified and samples will need to be collected again for each lost sample.	Tier I report	ECS Project Manager
All Samples	Samples out of Hold Time	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager
All Samples	Broken vials or air bubbles in vials	SCDHEC will be notified and samples will need to be collected again.	Tier I report	ECS Project Manager

Table 9A Corrective Action Procedures

3. Identify sample disposal procedures.

Analysis	Matrix	Schedule for disposal	Method for disposal	Comments
-	Decon water	As generated	55 gal drum onsite	See B2 Discussion
-	Soil	As generated	55 gal drum onsite	See B2 Discussion
All	Soil and Water	Monthly	Veolia Technical Solutions	All laboratory samples are disposed according to S-CHR-S-002, Waste Handling and Management

4. Provide SOPs for the Kerr Method or the Ferrous Iron Method if these are parameters for this study. This can be attached or written here. If attached please note that it is an attachment and where it is located (if applicable).

Not Applicable

B5 Quality Control Requirements:

All QC will follow the requirements laid out in Section B5 of the UST Programmatic QAPP.

B6 Field Instrument and Equipment Testing, Inspection and Maintenance

1. Identify all fields and laboratory equipment needing periodic maintenance, the schedule for this, and the person responsible. Note the availability and location of spare parts.

Instrument	Serial Number	Type of Maintenance	Frequency	Parts needed/Location	Person responsible
In-Field PID Instrument	MiniRae 2000 PGM 7600	As recommended in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
In-Field Groundwater Quality Instrument	Horiba Y2FAH6H3	As recommended in attached Horiba W-22XD.23XD Operation Manual pp 28-32	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Volatiles Mass Spec	ALL	Change traps, clean ion source, replace filaments	Periodic	Laboratory	MSV Analyst
Semivolatile Mass Specc	ALL	Injection port maintenance, ion source maintenance, column replacement	Periocid	Laboratory	MSSV Analyst
Groundwater Level Indicator	Heron WLI 11614	As recommended in attached Heron Instrument O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
Interface Probe	1220056491	As recommended in attached Heron Interface O&M Manual	Periodic	Manufacturer/Rental Equipment Supplier	Phil Pike Aaron Williamson
ECD GC	ALL	Injection port maintenance, column replacement	Periodic	Laboratory	GC Analyst
MetrohmIC	ALL	Replace autosampler filter, tubing, line filter, sample Line and Waste Line, as needed. Clean Pump roller, Check Reagent levels, flow rate, waste line.	Periodic	Laboratory	IC Analyst
ICP	ALL	Clean Sample introduction system , autosampler, torch,	Periodic	Laboratory	ICP Analyst

		Change spray chamber, torch tubing, tubing			
Cetac Mercury Analyzer	ALL	Clean GLS, Change Pump tubing, Nafion Dryer, Lamp	Periodic	Laboratory	Mercury Analyst
Flow Injection Analysis – Lachat 8000	ALL	Clean Rods, Injection Valves, Manifolds, Replace tubing, lamps, other as needed	Periodic	Laboratory	Nitrate Analyst

Table 11A Instrument and Equipment Maintenance

2. Identify the testing criteria for each lab or field instrument that is used to ensure the equipment is performing properly. Indicate how deficiencies, if found, will be resolved, re-inspections performed, and effectiveness of corrective action determined and documented. Give the person responsible for this.

Instrument/Equipment & Serial Number	Type of Inspection	Requirement	Individual Responsible	Resolution of Deficiencies
In-Field PID Instrument MiniRae 2000 PGM 7600	Daily prior to use	Calibration as discussed in attached MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
In-Field Groundwater Quality Instrument Horiba Y2FAH6H3	Daily prior to use	Calibration as discussed attached in Horiba W-22XD.23XD Operation Manual pp 28-32	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Groundwater Level Indicator Heron WLI 11614	Daily prior to use	Calibration as discussed in attached Heron Instrument O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Interface Probe Heron 1220056491	Daily prior to use	Calibration as discussed in attached Heron Interface O&M Manual	Phil Pike Aaron Williamson	Recalibrate or instrument maintenance
Volatiles Mass Spec	Daily calibration check	Method Requirements	MSV Analyst	Recalibration or instrument maintenance
Semi volatiles Mass Spec	Daily calibration check	Method Requirements	MSSV Analyst	Recalibration or instrument maintenance
ECD GC	Daily calibration check	Method Requirements	GC Analyst	Recalibration or instrument maintenance
Metrohm IC	Daily calibration check	Method Requirements	Nitrate Analyst	Recalibration or instrument maintenance
ICP	Daily calibration check	Method Requirements	ICP Analyst	Recalibration or instrument

				maintenance
Cetac Mercury Analyzer	Daily calibration check	Method Requirements	Mercury Analyst	Recalibration or instrument maintenance
Flow Injection Analysis – Lachat 8000	Daily calibration check Method Requirements	Method Requirements	IC Analyst	Recalibration or instrument maintenance

Table 12A Instrument and Equipment Inspection

B7 Instrument Calibration and Frequency

1. Identify equipment, tools, and instruments for field or lab work that should be calibrated and the frequency.
2. Describe how the calibrations should be performed and documented, indicating test criteria and standards or certified equipment.
3. Identify how deficiencies should be resolved and documented. Identify the person responsible for corrective action.

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
In-Field PID/FID Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	MiniRae O&M Manual Doc #011-4001-000 pp 4-5 through 4-10
In-Field Groundwater Quality Instrument	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	Horiba W-22XD.23XD Operation Manual pp 28-32
Groundwater Level Indicator	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Instrument O&M Manual
Interface Probe	Operator's Manual and/or Rental Equipment Supplier	Daily prior to use	Operator's Manual and/or Rental Equipment Supplier	Operator's Manual and/or Rental Equipment Supplier	Phil Pike Aaron Williamson	See attached Heron Interface O&M Manual
Volatiles Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSV Analyst	S-CAR-0-023

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference*
Semi volatile Mass Spec	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	MSSV Analyst	S-CAR-O-015 S-CAR-O-052
GC ECD	5 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	GC Analyst	S-CAR-O-020
Metrohm IC	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	IC Analyst	S-ASV-058
ICP	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	ICP Analyst	S-ASV-043
Cetac Mercury Analyzer	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Mercury Analyst	S-ASV-M-020
Lacaht QuickChem 8000	3 calibration standards for all compounds	When indicated by daily calibration verification standard	Method Criteria	Detailed in SOP	Nitrate Analyst	S-ASV-I-021
Sieve	S-5	6 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Grain Size
Ovens	S-4	4 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Ovens
Scales	S-17	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Electronic Scales
Hydrometer	S-6	24 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Hydrometer
Hydrometer Solution	S-7	monthly	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Sodium Hexametaphosphate
Thermometer	S-21	12 months	Method Criteria	Detailed in SOP	Joshua Slusarczyk	Digital Thermomters

Table 13A Instrument Calibration Criteria and Corrective Action

*** This can be a full name of a SOP, an abbreviation, or a number. In the latter two cases, the abbreviation or number must be associated with the full name of the SOP. See also Table 8A SOP Abbreviation Key.**

B8 Inspection/Acceptance Requirements for Supplies and Consumables

1. Identify critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials.
2. Identify the individual(s) responsible for this.

Item	Vendor	Acceptance criteria	Handling/Storage Conditions	Person responsible for inspection and tracking.
Span gas for PID	Liquid Technology Corp.	Attached pressure gauge reads what sticker on span gas can details.	Cool dry cabinet	Phil Pike Aaron Williamson
Leather Gloves	Home Depot	New & Undamaged	Cool dry cabinet	Phil Pike Aaron Williamson
Nitrile Gloves	Enviro-Equipment	New & Undamaged	Sealed boxes	Phil Pike Aaron Williamson
Laboratory Chemicals	Fisher,VWR,	Certificates of analysis and laboratory testing	Laboratory storage	Receiving and laboratory personnel
Laboratory standards	O2Si, Restek, Fisher, VWR, Inorganic Ventures, CPI	Certificates of analysis and laboratory verifications	Vendor specific storage conditions	Laboratory Analysts
Sample Containers	Daniels Scientific, Fisher, O2Si	Certificates of analysis and laboratory testing	Bottle storage area	Sample receiving personnel
Disposable Bailers	GeoTech	New & Undamaged	Individually wrapped in sterile plastic	Phil Pike Aaron Williamson
Twine	Home Depot	Sealed in plastic	Sealed in plastic and isolated from contaminant sources	Phil Pike Aaron Williamson

Table 14A List of Consumables and Acceptance Criteria

B9 Data Acquisition Requirements (Non-Direct Measurements)

1. Identify data sources, for example, computer databases or literature files, or models that should be accessed or used.
2. Describe the intended use of this information and the rationale for their selection, i.e., its relevance to project.
3. Indicate the acceptance criteria for these data sources and/or models.

Data Source	Used for	Justification for use in this project	Comments
Previously Submitted UST Closure Report, Tax Map, Topographic Maps	Historic GW depth/GW Quality & values	Establishes the DTW; Establishes materials needed.	Documents provided by SCDHEC will be considered an acceptable data source.
-	-	-	-
-	-	-	-

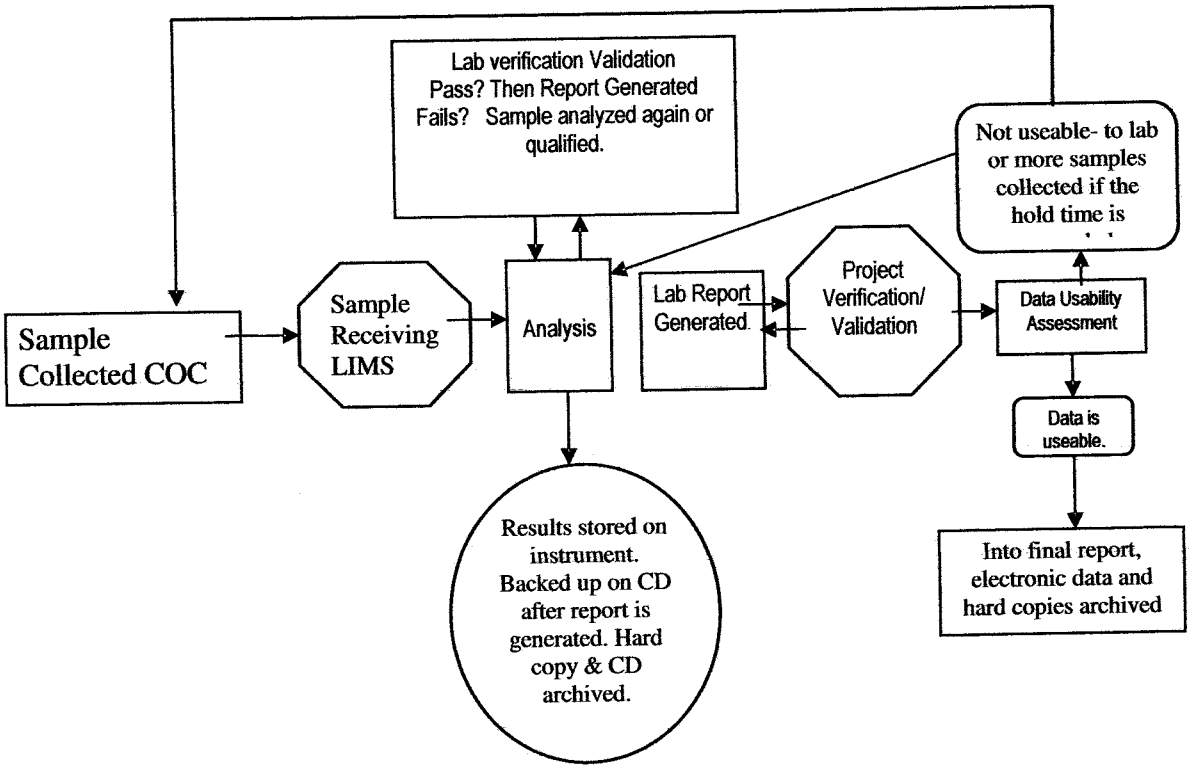
Table 15A Non-Direct Measurements

4. Identify key resources/support facilities needed.

Samples shall be picked up at ECS, Inc. and transported to the laboratory by the subcontracted laboratory's courier service. No additional support facilities will be anticipated for this scope of work.

B10 Data Management

1. Describe the data management scheme from field to final use and storage.



2. How does the lab and field staff ensure that no unauthorized changes are made to the chain of custody, sampling notebooks, laboratory notebooks and computer records?

The laboratory maintains comprehensive Quality Control and Training Programs. All sample receipt data, sample log-in and analytical data is peer reviewed, including review for inappropriate changes. Data management, review procedures and the Quality Systems Program are documented in the laboratory's Quality Manual and Standard Operating Procedures. The Quality Management Department oversees adherence to and review of these programs.

Field notes are recorded in bound, water resistant log books using indelible ink. Pages are dated at the start of the field day, and the name or initials of the field staff, weather, and required activities for the day are recorded. Chain-of-custody documentation information is recorded on field sheets which accompany samples to the lab. Data collected in the field is also entered into a limited access database.

Project related computer files are stored on a restricted access network server. Information is backed-up daily. Logbooks are scanned into the network server.

3. How does the lab ensure that there are no errors in samples records including times when sample information is compiled, data calculated and/or transmitted?

Sample data acquisition software included audit trails which are reviewed periodically under the Laboratory's Quality Systems Program. Laboratory data systems are backed up daily and able to be restored in the event of a system failure. These procedures are documented in laboratory SOPs S-ALL-IT-001, System Security and Integrity and S-ALL-IT-002, Server Backup. The IT System Manager is responsible for these systems and procedures.

4. How will the data be archived once the report is produced? How can it be retrieved? (This applies to both electronic and hard copies).

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Hard copies will remain in the office for a minimum of 5 years. The electronic copies will be maintained for a minimum 5 years.

Laboratory Hardcopy data stored off site is logged, maintained and archived by the Quality Management Department. Laboratory Electronic Data Reports are maintained through IT back up under the responsibility of the IT Systems Manager and the Corporate IT Department.

Section C Assessment and Oversight

C1 Assessment and Response Actions

1. *The Contractor is supposed to observe field personnel daily during sampling activities to ensure samples are collected and handled properly and report problems to DHEC within 24 hours. Please state who is responsible for doing this and what observations will be made. Will this person have the authority to stop work if severe problems are seen?*

The Contractor Project Manager will supervise field personnel during sampling activities to ensure samples are collected according to the requirements of the QAPP. The Contractor Project Manager shall provide oversight and will have the authority to stop work when necessary.

2. *The SCDHEC UST QAPP states that the Lab will receive an Offsite Technical System Audit. For this project, what assessments will be done on the Commercial Lab(s) that are being used—other than their certification audit? When or how often are these done? Who will the results be given to and who has the ability to stop work if problems are severe?*

Contractor may request an Independent Audit based on document review or complaints.

The laboratory participates in annual Proficiency Testing through an approved vendor, Environmental Resources Associates. Proficiency Testing results are provided to the Office of Environmental Laboratory Certification. Each laboratory will notify ECS, Inc. of any problems and if the previous data is suspect.

The ECS, Inc. project manager will have the authority to stop work when necessary.

C2 Reports to Management

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

Section D Data Validation and Usability

See the SC DHEC UST Programmatic QAPP (UST Master QAPP).

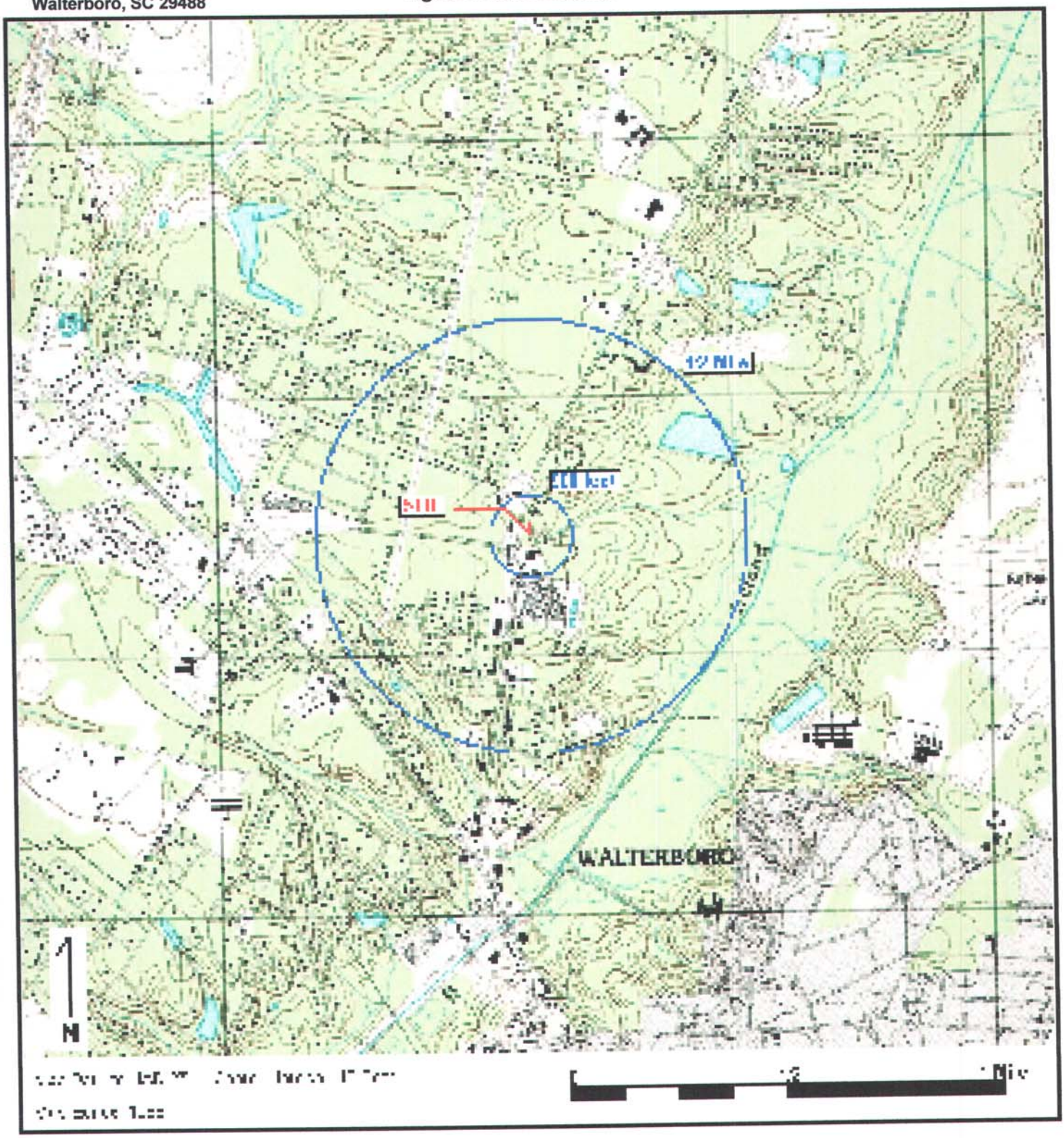
QAPP APPENDIX B ATTACHMENTS

O&M Manuals, SOPs, & Laboratory Chain of Custodies

Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins

Legend

Approximate Property Line

147-15-00-057.000 Tax Parcel Number

PROPOSED SOIL BORINGS

PROPOSED MONITORING WELL

General Notes:

All locations, dimensions and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Reference: Colleton County GIS.

ecs
WHERE BUSINESS AND THE ENVIRONMENT CONVERGE
13504 SOUTH POINT BLVD. UNIT F
CHARLOTTE, NORTH CAROLINA 28273
TEL. (704)583-2711 FAX (704)583-2744

PROJECT: **Rhodesway North**
1400 N. Jeffries Highway
Walterboro, South Carolina

TITLE: **Site Plan**

CLIENT: **Rhodes Oil Company, Inc.**

GRAPHIC SCALE: 30 15 0 15 30

COMPUTER CADFILE: C:\MyDocuments\Charlotte\

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
RH	RH	RH	CK
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1"=30'	4/1/11	14-214778	2

Contact Heron Instruments Inc.

T 1-800-331-2032
905-634-4449

F 905-634-9657

E info@heroninstruments.com

www.heroninstruments.com

Heron also carries:

- dipper-log groundwater dataloggers
- H.OIL Interface Meters
- Sm.OIL Interface Meters

HERON INSTRUMENTS Groundwater Monitoring INC.
Your obvious choice

Warranty

Heron Instruments Inc warrants to repair or replace any such defective equipment or part (determined to our satisfaction to have a defect in workmanship or original material) upon receipt and inspection of such defective equipment to Heron Instruments Inc. with all shipping pre paid by the user.

In no event shall Heron be liable for any direct, indirect or consequential damages, abuse, acts of third parties (rental equipment) environmental conditions or other expenses which may arise in connection with such defective equipment. This warranty shall not apply to damage of equipment caused by incorrect installation, usage, storage alteration or inadequate care.

Heron Warranty coverage does not extend to the following:

- Tape, bag or batteries used with the product.
- Products used as rental equipment.
- Products contaminated by materials which are hazardous and as such have rendered the unit unserviceable as outlined in the maintenance guide and warranty manual.
- Parts failure due to neglect in cleaning or servicing.
- Failure of parts caused by misuse or inappropriate use.

All probe tips (excluding dipper-T 5/8 probe tip) warranted for 1 year.

When returning a product under warranty, please review service options available or advise Heron Instruments in advance, by telephone at 1-800-331-2032 or 905-634-4449; by fax at 905-634-9657 or by e-mail at info@heroninstruments.com

Accurate. Efficient.

On the job!

Groundwater monitoring instruments

Operating/Maintenance Instructions & Warranty for

dipper-T, little dipper, SKINNY DIPPER, WATER TAPE & potable water meter

Water Level Meters

HERON INSTRUMENTS Groundwater Monitoring INC.
Your obvious choice

General

Avoid sharp edged casing

Avoid entanglement with other equipment in boreholes and wells.

Do not use to plumb borehole depths

Do not use as guide to backfilling with sand etc. Instrument may get locked in sand.

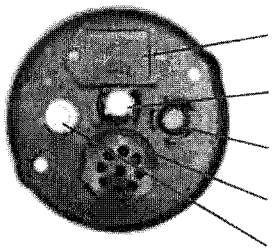
Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

Maintenance continued inside

Water Level Meter Instructions

dipper-T, little dipper, potable water meter, SKINNY DIPPER



Battery Box

Sensitivity Knob for Cascading Water

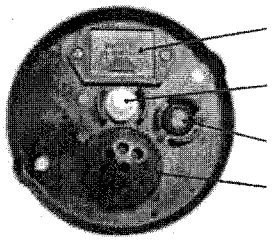
Signal LED

Signal Buzzer

Test Button Only

IMPORTANT
This is not an ON/OFF switch

WATER TAPE



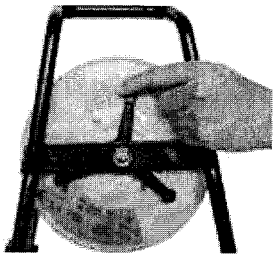
Battery Box

ON/TEST Button

Signal LED

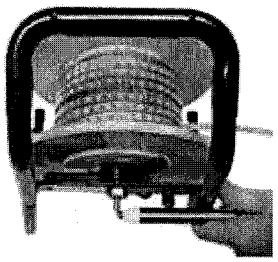
Signal Buzzer

NOTE: WATER TAPE does not have a sensitivity control.



Reel Lock

To unlock the reel turn the plastic lock handle in the direction shown until it touches the frame.



To Test Entire System

Hold the centre pin on the probe against the stud on the back of the axle at the same time touch the probe body against the screw on the frame. The buzzer will sound if the system is ok. **Make sure unit is on.**

Equipment Check

1 Test circuit and battery by pressing the **white** button. Make sure the panel securing knobs are tight. If the unit does not sound, replace the battery (one 9 volt) in the drawer on the faceplate and repeat.

2 Test tape and probe by shorting out the centre conductor and probe body on the stud on the back axle of the unit as shown. The buzzer and light should activate; if not, adjust the sensitivity and repeat. **Make sure unit is on.**

3 Test the unit in tap water before going out to the field. **DO NOT** use distilled or deionized water.

Use in the Field - Important*

1 Reel the tape down the well carefully, avoiding the edge of the casing. Hang the unit on the casing where possible and run the tape over the tape guide on the frame leg to avoid cuts and nicks.

2 When the unit sounds, carefully measure the depth to water from your reference point by slowly lowering and raising the probe to the air/water interface. Raise the probe, shake off the water and repeat the measurement. In wells with cascading water, reduce the sensitivity by turning the Sensitivity Knob anti-clockwise.

3 The dipper-T, little dipper and WATER TAPE probes are rated to full depth and can be used to measure depth to bottom of well. Reel the tape until the probe touches bottom and the tape becomes slack. **DO NOT** let the probe fall under gravity or it will be damaged when it hits the bottom of the well. **DO NOT** use the unit to measure sand backfill as the tape and probe may get "locked" in the backfill.

4 Wind the tape back onto the reel, removing any excess moisture and dirt.

Cleaning the Meters

1 Always the clean the meters after use in the field to maintain optimal performance and extend the life of the unit.

2 Unwind the tape and probe and wash with a mild detergent. Rinse well, wipe and rewind onto the reel. The tape and probe can be cleaned and degreased with the following: soap solution, naptha alcanox 10%, Joy detergent 10%, Lestoil; methyl, isopropyl and isobutyl alcohols; hexane, heptane and fully halogenated freon. Rinse thoroughly with water afterwards.

3 Wash reel if necessary. The central electronic panel can be removed and the reel washed down. Unthread the panel securing knobs and carefully pull out the central panel. Disconnect the panel from the tape. The reel may be cleaned with the following: soap solution, naptha alcanox 10%, Fantastic, Windex, Joy, Top Job, Mr. Clean, Formula 409; hexane, heptane, white kerosene, mineral spirits; methyl, isopropyl, isobutyl and 1 + 3 denatured alcohols; freons TF + TE. Rinse well with water and let dry before putting the panel back in. DO NOT use abrasives, partially halogenated hydrocarbons or ketones to clean the reel.

Trouble Shooting

No Sound when the unit is tested

1 Check battery by pressing the **white** button. Replace battery if low and make sure panel securing knobs are tight. If unit still does not sound, remove central panel and check all connections.

2 Check probe conductor to make sure it is clean and not crusted with mineral deposits. Check tape/probe connection for any breaks.

Continuous Sound when the unit is turned on or probe removed from water.

1 Make sure probe conductor tip is clean.

2 Check for excess moisture on the back of the electronic panel.

3 Check probe/tape connection and tape for any breaks or leaks where water might get in.

General

- Avoid sharp edged casing
- Avoid entanglement with other equipment in boreholes and wells.
- Do not use as guide to backfilling with sand etc., Instrument may get locked in sand.
- Rewind tape onto reel after each use

Warranty is conditional upon adherence to these guide lines.

***Important: Ensure that the Panel Securing Nuts are tight before use.**

MULTI-PROBE

W-20XD Series

W-22XD.23XD

Operation Manual

■

HORIBA

3.2.2 AUTO calibration method

To obtain correct measurement, it is necessary to calibrate the sensor using the standard solution before performing measurement. Previous calibration records shown in calibration data. See page 47 "Calling up The calibration data"

Note

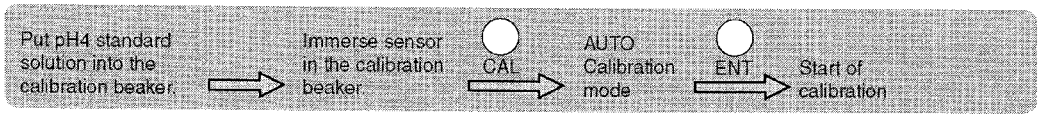
- In the AUTO calibration mode, the pH and COND sensors are calibrated with pH4 standard solution, and the DO and DEP sensors in the atmosphere simultaneously.
  Calibration contents at 25 °C are as follows:
  - pH: Calibrate at 4.01 (zero calibration) and the Span is the adjustment value at the factory.
  - COND: 0.449 S/m (Span calibration), the Zero is the adjustment value at the factory.
  - TURB: 0 NTU (zero calibration), the Span is the adjustment value at the factory.
  - DO: 8.52 mg/L (Span calibration), the Zero is the adjustment value at the factory.
  - DEP: 0 m (Zero calibration), the Span is the adjustment value at the factory.

Auto-Cal Explanations

When "Auto-Cal" function is used with no calibration record, it will make one point calibration with the value seen below. We recommend to use this function, when no calibration record exists or the calibration is lost, and you're in need for quick & fast calibration
When "Auto-Cal" function is used after manual two-point calibration, please be reminded of the description below. We recommend not to use "Auto-Cal" function when manual two-point calibration is performed already.

	Auto Cal Value	What happens when "Auto Cal" is performed after manual two point calibration	Recommendation
pH	4.01 pH	When "Auto Cal" is performed after two point manual calibration (manual zero calibration and span calibration): 1) The manual zero calibration value will be over written. 2) The slope of the calibration curve calculated by manual calibration will remain unchanged.	
Conductivity	0.449 S/m	"Auto Cal" will over write the mid-range span value (0.090~0.999 S/m) with 0.449 S/m. The span value of the lowest / highest ranges will also be automatically calculated and over-written by mid-range span value. The manual zero calibration value will remain unchanged.	In order to obtain a high accuracy in calibration, we recommend using the standard solution for each range.
Turbidity	0 NTU	The manual zero calibration value will be over-written by "Auto Cal". The manual span calibration value will remain unchanged.	For both manual and "Auto-Cal", make sure the container for the standards is clean and have no contamination. When the standard is contaminated, it will affect the lower turbidity value.
DO	8.52 mg/L	The manual span calibration value will be over-written by "Auto Cal". The manual zero calibration value will remain unchanged.	
Depth	0 m	The 0m amount will be replaced by "Auto Cal".	

- Values may be unstable if there is temperature fluctuation. Calibrate after waiting for about an hour.

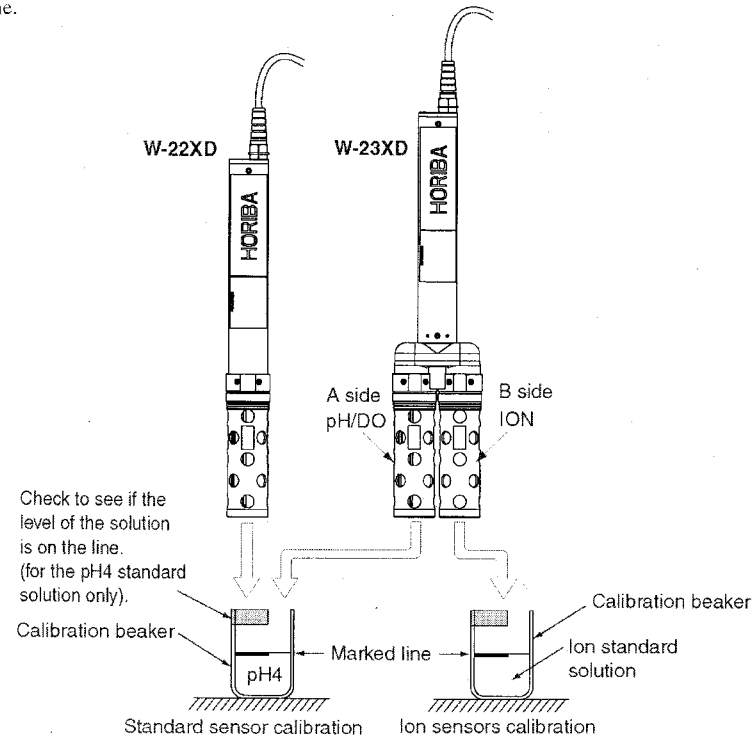


Calibrate with the following procedure.

1. Wash the sensor with distilled water a few times and put the pH4 standard solution into the calibration beaker to the marked line. Then immerse the sensor in it.
For the W-23XD model, immerse the sensor A side.

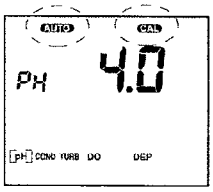
Important

- According to the label indication on the calibration beaker, check to see if the level of the calibration solution is on the label line.



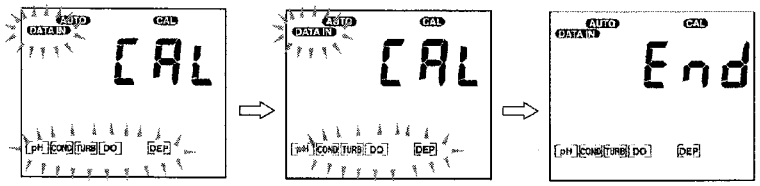
2. Press the CAL key, when one of pH, COND, TURB, DO or DEP is selected.

AUTO and CAL appear and the control unit enters the AUTO Calibration mode.



3. Press the ENT key to start AUTO Calibration.

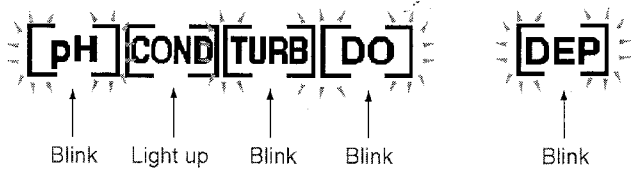
Upon completion of all of the pH, COND, TURB, DO, and DEP, End will be displayed.
During calibration, DATA IN and [ ] for the selected measurement parameter blink. [ ] light up for the parameter of which calibration is finished.



End of calibration

When DATA IN is blinking
To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

Example: When COND calibration is finished:
[ ] for [COND] stops blinking is lit



Note

- For any parameter in which the calibration error has happend, calibration can not be performed, and [ ] indication keeps blinking. If two or more errors happen, an error with a smaller error number appears. (See pages 98 to 100 for these errors and troubleshooting.)
  These calibration errors disappear when the sensor is calibrated properly again, or when the control unit is turned ON again.
- Calibration is performed simulitaneous and independently for all these parameters until each reading becomes stable, but the maximam duration allowed is three minutes. If the reading can not become stable within three minutes, the calibration terminates and calibration error is given to the correspondent parametre(s).

4. Press the MEAS key to return to the Measurement mode.

Important

- Neutralize pH 4 standard solution before disposal.

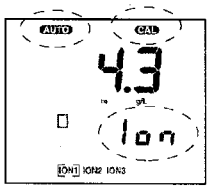
AUTO calibration of the ion sensors (W-23XD model only)

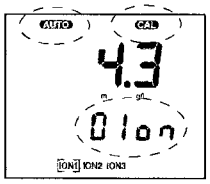
AUTO calibration is possible only for the combination of Cl^-, NO_3^-, Ca^{2+}.
For other ion sensors, the manual calibration is required after setting ion valence described on page 82.
Span calibration value preset for auto calibration corresponds to the concentration of standard solution provided as an accessory or 10 times diluted value of the standard solution.

Important

- Ion sensors take time to give stable indications. Therefore, immerse the ion sensors in standard solution for approximately one hour prior to the calibration. Then calibrate the ion sensors and perfom measurements.

1. Wash the sensor with distilled water a few times. Put the supplied ion standard solution (#130) into the calibration beaker to the marked line. Then immerse the B side of the sensor in it.
2. Enter ion measurement mode at one of ion 1, ion 2 or ion 3.
3. Press the **CAL** key.
   AUTO, CAL, and "Ion" appear. The control unit then enters the AUTO Calibration mode.
4. Press the **SET** key.

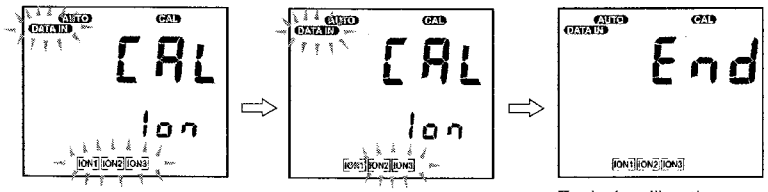




When "Ion" is diplayed:
When 35.5 mg/L, 31.0 mg/L, or 20.1 mg/L is displayed, use these values for span calibration 1 "For Chloride, Nitrate and Calcium ion sensors".

When "0 Ion" is displayed:
When 3.55 mg/L, 3.10 mg/L, or 2.01 mg/L is displayed, use these values for dencity by 1/10 of span calibration 2 "For Chloride, Nitrate and Calcium ion sensors".

5. Press the **ENT** key to start AUTO calibration.
   Upon completion of the AUTO calibration of all the ion sensors ION1, ION2, and ION3, End will be displayed.



End of calibration

When DATA IN is blinking
To stop the calibration ..... press the CAL key.
To fix the calibration ..... press the ENT key.

6. Press the **MEAS** key to return to the Measurement mode.

7.2 Troubleshooting

The instrument has a simple error message that informs users of operational errors and failure. Err No. is displayed at the bottom of the screen.

● Error message list

Err No.	Designation	Err No.	Designation
1	Sensor memory failure	6	Span calibration error
2	Sensor battery voltage drop	7	Calibration stability error
3	Instrument battery voltage drop	8	Printer error
4	Communications error	9	DATA IN error
5	Zero calibration error		

● Error and remedy

Important

- For err Nos. 5 to 7, the calibration err display disappears when a proper calibration is performed after the following action, or when the instrument is turned on again. For the other err Nos., the err display disappears after any of the following actions is taken.
- Error Nos. 2 and 3 are displayed even when using the AC adapter if the sensor probe battery voltage or instrument battery voltage drops is low on voltage.

Err NO.	Problem	Cause	Remedy
1	No data can be read from or written into the sensor probe memory.	Internal IC failure	Call your nearest store for sensor probe repair.
2	Sensor probe battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the sensor probe battery. ② Set the batteries (LR03) in the correct direction.
3	Instrument battery voltage drop	① Battery voltage drop ② Improper installation of the battery	① Replace the instrument battery. ② Set the battery (6LR61) in the correct direction.
4	No communications possible between the instrument and the sensor probe	① Improper connection of the connector to the instrument ② Cable disconnection	① Connect the connector to the instrument properly and turn on the instrument again. ② Call your nearest store for cable repair.
5	No zero calibration possible	pH • The standard solution is contaminated. • Contamination on the pH glass membrane • Change in concentration of the internal solution for the reference electrode • Cracks in the pH glass electrode COND • The standard solution is contaminated. • The sensor is dirty. • The COND sensor is broken.	pH • Change the standard solution. • Clean the pH glass membrane. • Replace the internal solution for the reference electrode. • Replace the sensor. COND • Change the standard solution. • Clean the sensor. • Contact your nearest store.

Err NO.	Problem	Cause	Remedy
5	Zero calibration not possible	TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		DO	DO
		• Damage to the diaphragm of the DO sensor	• Check the sensor and replace it if damaged.
		DEP	IDEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
6	Span calibration not possible	pH	pH
		• Contamination on the pH glass membrane	• Clean the pH glass membrane.
		• Change in concentration of the internal solution for the reference electrode	• Replace the internal solution for the reference electrode.
		• Cracks in the pH glass electrode	• Replace the sensor.
		COND	COND
		• The standard solution isn't correct.	• Calibrate with correct standard solution.
		• The standard solution value is set uncorrectly.	• Delete the calibration data for the conductivity, then calibrate the sensor again. (☞ Page 51)
		• The COND sensor is broken.	• Contact your nearest store.
		TURB	TURB
		• Air bubbles in the cell	• Swing the sensor probe while drawing a large arc.
		• Cell contamination	• Clean the cell.
		• The lid is attached uncorrectly.	• Confirm if the lid is attached correctly, then calibrate the sensor again. (☞ Page 30)
		DO	DO
		• Damage to DO sensor diaphragm	• Check the DO sensor and replace it if damaged.
		• DO sensor is unstable.	• Connect DO sensor to the sensor probe. Calibrate the sensor again 1 day later.
		DEP	DEP
		• Contamination on the DEP sensor	• Clean the DEP sensor.
		• Damage to the DEP sensor	• Contact your nearest store.
		TEMP	
		• Damage to the TEMP sensor	• Contact your nearest store.
7	The calibration value does not become stable within approximately three minutes.	① Sensor contamination	① Clean each sensor.
		② Dry sensor surface	② Pour the standard solution into the calibration beaker. Calibrate the sensor again 1 to 2 hours later.
		③ Severe temperature change	③ Calibrate the sensor in a place at a stable temperature or in a thermostatic oven.

Err NO.	Problem	Cause	Remedy
8	Printer unit failure		Turn OFF the instrument and use the remedy described below. Then turn ON the printer again.
		① Paper has jammed in the printer	① Remove the jammed sheet of paper
		② Improper printer unit connection	② Check to see if the printer is properly connected to the instrument.
		③ Printer failure	③ Replace the printer. * Contact your nearest store if the instrument does not recover after replacement of the printer.
9	Data cannot be stored because the memory is full.	No free space in the memory	Delete the data stored in the memory. (☞ Page 81)

● Other troubles

Remedies for various trouble with no Err No. displayed are described below.

Problem	Cause	Remedy
No data display with the power on	• No batteries	• Set new batteries.
	• Improper position of the positive and negative poles	• Set the batteries properly while paying attention to the positive and negative poles.
	• Battery voltage drop	• Replace the batteries with new ones.
	• Improper instrument battery contact	• Use radio pliers to narrow the positive terminal of the battery snap.
No setting change possible	• Automatic data storage is under way	• Press the CAL key to stop the automatic data storage.
No key operation possible	• The key lock function is working	• Turn OFF the instrument. Then turn ON the instrument again. (☞ Page 76)
	• Failure to calibrate the sensor or wrong calibration.	• Calibrate the sensor properly.
Blinking measured value	• Improper measurement sample	• Use a sample that is in the measurement range.
	• Sensor contamination	• Clean each sensor.
	• Poor calibration is possible. (The standard solution is contaminated.)	• Carry out correct calibration.
tYPE Err The Err is displayed and the operation cannot be performed.	• Improper connection of the cable connector to the instrument	• Connect the connector to the instrument properly and turn on the instrument again.
	• Cable disconnection	• Contact your nearest store.
	• Instrument inside failure	• Contact your nearest store.

● Troubleshooting for the TURB sensor

If an abnormal value such as -10, 800 or more is indicated, or indication does not become stable, follow as below instructions.

Remove the contamination of the sensor

Remove the cover of the turbidity (TURB) sensor, and clean the sensor with cotton swab.
Contamination or bubbles on the sensor may cause fluctuation of TURB values.

Remove bubbles around the sensor

When immersing sensor in the calibration cup, be sure lower it slowly. Quick immersion may cause bubbles on the sensor, which can have bad influence on calibration accuracy to give abnormal value indication.

Use of new standard solution

When calibration, clean the sensor before immersing it in the new standard solution. In case of zero calibration, when the standard solution is turbid or contaminated, calibrate again with the new standard one.

Points to be noted in making measurement

Immerse the sensor slowly in the sample. In case of abnormal measurement value observed, contamination or bubbles adhering may be suspected. So, shake greatly the sensor. Since immersion of the sensor in the sludge layer at the bottom of the sample can prohibit accurate measurement, shake greatly enough to remove the sludge.

● Maintenance of DO sensor

Durable life of DO sensor is generally one year, however, it may vary depending on the using condition. In case of the failure of calibration or breakage of the diaphragm, take either of the following steps according to the using period.

Within one year after purchasing :

Obtain diaphragm replacement kit (optional) to replace the used diaphragm and replenish the internal solution for restoration.

When exceeding one year after purchasing :

Replace by the new DO sensor.

Environmental Compliance Services, Inc.

STANDARD OPERATING PROCEDURES
FOR
ENVIRONMENTAL COMPLIANCE SERVICES, INC.
AT
SOUTH CAROLINA UST SITES

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October 2011

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STANDARD OPERATING PROCEDURES

This document details the standard operating procedures (SOPs) employed by Environmental Compliance Services (ECS) of Agawam, Massachusetts. These SOPs are employed by ECS when performing environmental assessments, hydrogeological investigations, and remedial activities on properties with releases of oil and hazardous materials. These SOPs are based on current commonly accepted professional standards and practices in the environmental field.

These SOPs cover the technical aspects of drilling, installation of monitoring wells, sampling of environmental media, and hydrogeological investigations. These activities will be conducted in general accordance with the SOPs unless site-specific conditions are encountered. Any changes in SOPs due to site specific conditions will be specified within a scope of services prior to the performance of the work, if known. If conditions are encountered during the performance of the work, the changes will be duly noted within the report documenting the work. Alternative methods are discussed for jobs requiring a lesser level of quality assurance and quality control (QA/QC).

These SOPs are based on established procedures included within the following: guidance documents produced by the American Society for Testing and Materials (ASTM), United States Environmental Protection Agency (USEPA), and South Carolina Department of Health and Environmental Control (SCDHEC); published professional papers; and current professional standards and practices. References for cited documents and papers are attached.

GENERAL SAMPLING PROCEDURES FOR AQUEOUS AND SOLID MATRICES

During field sampling activities, the following applicable procedures will be practiced for sample collection:

- Whenever possible, samples will be collected first from the location expected to be least contaminated. Samples that are expected to be most contaminated will be collected last.
- Accurate and detailed field notes will be maintained in a bound field notebook. Soil samples will be examined and logged in the field.
- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.
- Soil samples will be selected for analysis based on the results of qualitative field screening for total volatile organic vapors, visual and olfactory observations, and the depth of the water table.
- Sample containers will be labeled with the site name, project number and date prior to being filled with a sample.
- All sample collection, handling, and shipping information will be recorded in a field notebook.
- Groundwater samples will be logged in a field notebook. Samples of other matrices (sediment, surface water, soil, etc.) will be logged in a field notebook.
- All samples should be collected according the specific requirements of the intended analytical method. Tables 1 and 2 provide lists of sample containers, preservation and holding time requirements for aqueous and soil/sediment samples, respectively.

Table 1: Sample Container, Preservation, and Holding Time for Groundwater

Table 1 **Sample Container, Preservation, and Holding Time for Groundwater**				
Analyte	**Analytical Method**	**Container**	**Preservation**	**Holding Time**
Benzene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Toluene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethylbenzene	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Total Xylenes	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
Total Naphthalenes	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1 ,2-Dichloroethane	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
MTBE	5030 with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
EDB	8011	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl, Residual Chlorine present: add $Na_2S_2O_3$ to make 0.008% concentration	14 days
ETBE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
3,3-Dimethyl-1- butanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAME	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
DIPE	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBF	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TBA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
TAA	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Ethanol	5030B with 8260B- oxy	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
1,2,4- and 1,3,5-trimethyl benzene isomers	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-butyl, sec-butyl, and tert-butyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
isomers				
Isopropyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
n-propyl benzene	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	14 days
Full List 8260B Scan	5030B with 8260B	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C	7 days
Benzo(a)anthracene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 4° C	7 days until extraction 40 days after extraction
Benzo(b)flouranthene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Benzo(k)flouranthene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Chrysene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
Dibenz(a,h)anthracene	3510C with 8270C	Amber glass container with Teflon-lined lid	Cool to 6° C	7 days until extraction 40 days after extraction
TPH (Oil & Grease)	9070A	1 Liter Glass	Cool to 6° C and adjust pH to less than 2 with H_2SO_4 or HCl	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Barium	6010C or 6020A	Polyethylene or Glass	HNO_3 to pH <2	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Chromium	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Mercury	7470A	Polyethylene or Glass	HNO_3 to pH <2	28 days
Selenium	6020A or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	HNO_3 to pH <2	6 months

Table 1
Sample Container, Preservation, and Holding Time for Groundwater

Analyte	Analytical Method	Container	Preservation	Holding Time
Nitrate	9210 or 9056	Polyethylene or Glass	Cool to 4° C	48 hours
Sulfate	9056	Polyethylene or Glass	Cool to 4° C	28 days
Methane	Kerr Method RSKSOP-175 rev 2, May 2004	2 x 40 ml glass vials with Teflon-lined septum caps	Cool to 6° C, pH < 2 with 1:1 HCl	14 days
Ferrous Iron	SM3500-Fe D	Glass	None	48 hours [1]
pH	9040C	NA	NA	Within 15 minutes
Conductivity	9050A	NA	Cool to 4° C	28 days
Turbidity	SM-2130B	NA	Cool to ~ 6° C	48 hours
Temperature	SM-2550B	NA	NA	Within 15 minutes
Dissolved Oxygen	SM-4500 O G or ASTM D888-05	NA	NA	Within 15 minutes

1 Analysis should be performed immediately in the field; however, if analysis is done in a laboratory, holding time is not to exceed 48 hours

Table 2
Sample Container, Preservation, & Holding Time for Soil

Analyte	Analytical Method	Container	Preservation	Holding Time
Benzene	5035 with 8260B	See Method for Requirements in SW 846		
Toluene	5035 with 8260B			
Ethylbenzene	5035 with 8260B			
Xylenes	5035 with 8260B			
Total Naphthalenes	5035 with 8260B			
MTBE	5035 with 8260B			
Benzo(a)anthracene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(b)fluoranthene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Benzo(k)fluoranthene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
Chrysene	3535A, 3540C, 3541, 3545A or 3550C	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after

Table 2
Sample Container, Preservation, & Holding Time for Soil

Analyte	Analytical Method	Container	Preservation	Holding Time
	with 8270D			extraction
Dibenz(a,h)anthracene	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (DRO)	3535A, 3540C, 3541, 3545A or 3550C with 8270D	Amber glass with Teflon- lined lid	Cool to 6° C	14 days until extraction 40 days after extraction
TPH (GRO)	5035 with 8015C	See Method for Requirements in SW 846		
TPH (Oil & Grease)	9071 B	Wide-mouth glass container with Teflon-lined lid	Cool to 6° C	28 days
Arsenic	6020A or 7010	Polyethylene or Glass	None	6 months
Barium	6010C or 6020A	Polyethylene or Glass	None	6 months
Cadmium	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Chromium	6010C or 6020A	Polyethylene or Glass	None	6 months
Lead	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
Mercury	7471 B	Polyethylene or Glass	None	28 days
Selenium	6020A or 7010	Polyethylene or Glass	None	6 months
Silver	6010C, 6020A, or 7010	Polyethylene or Glass	None	6 months
TCLP (metals)	1311	See Method for Requirements in SW 846		
Total Organic Carbon (TOC)	9060A	Polyethylene or Glass	Coot to 4° C	28 days

- All samples will be placed in a chilled, thermally-insulated container containing ice. Blue ice, ice packs, or ice substitutes are not able to reach and maintain the required temperature until receipt at a laboratory.

- All soil samples for volatile organic compound analysis must be collected, preserved, and handled according to published method procedures.

DECONTAMINATION

Decontamination will be performed in order to: minimize the spread of contaminants on the Site and from one sampling location to another; reduce the potential exposure of field personnel to contaminants; and to ensure good data quality and reliability. Decontamination of all field analytical testing and sampling equipment will be performed according to the following procedures. These procedures are based on ASTM Designation D 5088-90, USEPA CERCLA QAPP Review Guidance, 1987, and USAEPA Region 4 Environmental Investigation guidelines (SOP & QAM, 2001).

Equipment cleaning procedures include pre-field, field, and post-field decontamination. Non-disposable equipment will be decontaminated after completing each sampling event. In cases of gross contamination (free phase product), rinse water will be contained for proper disposal according to municipal, state, and federal regulations. Decontamination procedures will be monitored through sampling and analysis when quality assurance/quality control checks are necessary.

Equipment will be dedicated to each sampling point and decontamination will be performed at the off-site facility as much as possible.

Decontaminated equipment will be rested on polyethylene sheeting at each sampling point.

Samplers will use new disposable gloves at each sampling point.

Potable water from the public water supply will be used for control rinse water.

A certified laboratory supply of deionized water will be used for decontamination of field testing and sampling equipment and for the collection of rinsate blanks. Deionized water will be stored in Nalgene, glass, or Teflon containers. The storage area containing the deionized water will be separated from the storage area for solvents.

Equipment rinsate blanks will be collected when a quality control check of the decontamination procedure is necessary. This check will not be performed if dedicated equipment is used. One blank will be collected at least once during a sampling event for each different piece of sampling equipment used. Rinsate blanks will be prepared by pouring deionized water over the decontaminated piece of equipment and collecting it in the sample container. The equipment rinsate blank will be analyzed for the same analytes as the samples that have been collected with that piece of equipment.

1.0 MATERIALS

- health and safety equipment;
- laboratory-supplied deionized water;
- phosphate-free detergent (Alconox, Liquinox);
- potable water (municipal water source);
- methanol;
- Hexane;
- Acetone;
- nitric acid rinse solution;
- wash basins;
- inert brushes;
- polyethylene sheeting;
- large heavy duty garbage bags;
- spray bottles;
- zip-lock bags;
- paper towels/Handiwipes;
- disposable gloves.

2.0 DECONTAMINATION PROCEDURES

- Soil and sediment sampling equipment (stainless steel sampling scoop, tool, and bowl, split-spoon and macro-core sampler, knife) will be decontaminated in the field after each use.

- Soil and sediment sampling equipment will be decontaminated as follows: scrubbed with inert brushes in a bucket containing phosphate-free detergent and potable water; rinsed with potable water; rinsed with pesticide grade methanol; and finally rinsed with deionized water. The final potable water and deionized water rinse volumes will equal 5 times the volume of the methanol rinse. The equipment will be allowed to air dry and will be stored in a clean environment until reused.

- Water quality instruments (e.g. Horiba Water Quality Meter), interface probe, down-hole slug test equipment, well development equipment, and other measuring instruments will be decontaminated between uses by rinsing with Alconox or Liquinox, followed by potable water and deionized water rinses. A methanol rinse will be utilized prior to the deionized water rinse in the event of gross contamination such as contact with free-phase product.

- The drill rig, direct-push technology equipment, and all drilling equipment and associated tools, including but not limited to augers, drill casing, drill rods, sampling equipment, and wrenches, will be steam cleaned prior to beginning the drilling on the Site. This cleaning will consist of using a high pressure detergent steam cleaning equipment, followed by a nanograde methanol swabbing if gross contamination was present. This will be followed by a controlled water rinse. Any down-hole equipment (auger flights, rods, sampling equipment, etc.) coming in contact with gross contamination (i.e. free phase product) will be steam-cleaned between uses. Otherwise equipment will be scrubbed manually with potable water and Alconox as needed to remove soil between uses.

- Sampling equipment and probes will be decontaminated in an area covered by polyethylene sheeting adjacent to the sampling location.

- In cases of gross contamination (i.e. free phase product) rinse water will be collected for proper disposal according to municipal, state or federal regulations. Contaminated solids (disposable

gloves, clothing, polyethylene tubing and sheeting, etc.) will be collected and characterized for proper disposal.

- Decontamination procedures will be fully documented in the field notebook. The following information should be recorded: Site location, date, time and weather; sample location where equipment used; location where decontamination was performed; field personnel performing the decontamination; decontamination procedures; disposal of rinse water if necessary; samples collected for QA/QC and analytical results.

- Health and safety procedures associated with decontamination are found in the Health and Safety Plan.

Pace Analytical®
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STANDARD OPERATING PROCEDURE

SAMPLE MANAGEMENT

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CAR-C-001-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	SOT-ALL-C-001-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-C-001-rev.01

APPROVALS

Laboratory General Manager — Date: 6/7/2010

Laboratory Quality Manager — Date: 6/7/2010 6/4/2010

Department Manager — Date: 6/4/10

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION		PAGE
1.	Purpose	3
2.	Scope and Application	3
3.	Summary of Method	3
4.	Interferences	3
5.	Safety	4
6.	Definitions	4
7.	Sample Collection, Preservation, and Handling	5
8.	Equipment and Supplies	5
9.	Reagents and Standards	6
10.	Calibration	6
11.	Procedure	6
12.	Quality Control	12
13.	Method Performance	13
14.	Pollution Prevention and Waste Management	13
15.	References	13
16.	Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.	14
17.	Revisions	14
Attachment I – Example COC Form		16
Attachment II – Example SCURF		17
Attachment III – Example SRF		18
Attachment IV – Method Hold Times		19

1. Purpose

The purpose of this Standard Operating Procedure (SOP) is to outline the procedures involved with the receipt, login, staging and disposal of samples received by Pace Analytical Services, Inc, Carolina's.

2. Scope and Application

2.1. The policies and procedures contained in this SOP apply to all personnel involved in the receipt, login, analysis, disposal and transfer of samples.

2.2. A sample acceptance policy is contained within the Procedure section that outlines guidelines for acceptable sample conditions. Any deviation from these guidelines requires detailed documentation within the report, usually as a footnote, or on the chain-of-custody, or SCURF and may require client contact.

3. Summary of Method

3.1. Samples are delivered to the laboratory via several delivery mechanisms. Samples received are checked for adherence to the Sample Acceptance Policy with any discrepancies noted. Discrepancies are communicated to the client for their acknowledgement.

3.2. The Laboratory Information Management System (LIMS, EPIC PRO) assigns all samples with a unique sample number and manages the analyses assigned to each sample.

3.3. Samples are labeled with the appropriate information and staged in refrigerated sample storage coolers if temperature preservation is required or on open shelves for samples not requiring sub-ambient temperature preservation. Samples will remain under these conditions until prepared and / or analyzed.

3.4. Samples and associated sub-samples (digestates, extracts, etc.) are maintained for 30 days after the date received unless otherwise requested by the client or other regulatory agency.

3.5. Samples are disposed of in accordance with local laboratory regulatory requirements and the laboratory's waste handling procedures.

4. Interferences

4.1. Samples may be prone to cross contamination from others within the same delivery group or from other client projects. The sample receiving personnel must make every effort to minimize cross-contamination.

4.2. Preservation checks are one of the most likely situations where cross-contamination may occur. Materials used in the process must be specific to each sample and may not used for multiple samples.

4.3. Samples are stored under specific conditions and in specific locations, typically by container type. However, consideration must be given to samples that are uniquely different from others. Samples that are anticipated to be severely contaminated should be segregated from others in anticipation that the high levels of contaminants may cross-contaminate others in close proximity.

5. Safety

5.1. Hazards and Precautions - Use extreme caution in handling samples and wastes as they may be hazardous. Each reagent and chemical used in this method should be treated as a potential health hazard. Reduce exposure by the use of gloves, lab coats, safety glasses and ventilation hoods. Material Safety Data Sheets (MSDS) are on file and available to all personnel.

5.2. All personnel involved in sample management are responsible for complying with OSHA and DOT regulations. These regulations pertain to the safe handling and/or shipping of the chemicals specified in this procedure. A reference file of Material Safety Data Sheets (MSDS) is available to all personnel. Refer to the Sample Control Supervisor for any questions or concerns related to the safe handling and shipment of hazardous materials.

5.3. Other laboratory safety requirements are contained in the Chemical Hygiene Plan/ Safety Manual. Immediate questions can also be addressed with the local Safety Manager.

6. Definitions

6.1. Definitions of terms found in this SOP can also be found in the Pace Quality Manual. When definitions are not consistent with NELAC defined terms, an explanation is provided in this SOP or the Pace Analytical Services' Quality Manual Glossary.

6.2. **LIMS - Laboratory Information Management System:** a computer system used to manage the flow and traceability of environmental samples and associated data within the laboratory.

6.3. **NELAC - National Environmental Laboratory Accreditation Conference:** a national laboratory-accrediting agency.

6.4. **MSDS - Material Safety Data Sheet:** contains information on chemicals used in the laboratory.

6.5. **COC - Chain-of-Custody:** a form used to record the field identification of samples collected, analyses requested, date and time of collection, sample preservation used, and traceability of samples from time of collection until delivery to the laboratory. This is a legal document.

6.6. **SCURF - Sample Condition Upon Receipt Form:** a form used to record the condition of samples received in the laboratory.

6.7. **Matrix:** the bulk characteristics of a sample. See Table 6.1.

6.8. **SRF – Sample Receipt Form:** form generated by LIMS system after a project is logged in. Contains sample and project information.

6.9. **UN Number** - identification numbers preceded by the letters UN are associated with proper shipping names considered appropriate for international and domestic transportation. These shipping names along with the identification numbers are located in the Federal Register (49CFR172.101).

6.10. **Sample Custody:** a sample is considered to be in someone's custody if:

6.10.1. It is in one's physical possession.

6.10.2. It is in someone's view, after being in someone's physical possession.

6.10.3. It is kept in a secured area, restricted to authorized personnel only.

Table 6.1

NELAC defined matrix	Pace Analytical defined matrix
Aqueous: any liquid sample not defined as drinking water or saline. Includes surface water, groundwater, effluents, TCLP and other extracts.	Waters: includes groundwater, wastewaters, drinking waters, effluents, and any free-flowing liquids.
Drinking water: any aqueous sample that has been designated as potable or potentially potable.	Not assigned as a separate matrix, but samples are assigned to drinking water methods.
Saline/Estuarine: any aqueous sample from an ocean, estuary or other salt water source	Not assigned as a separate matrix from waters.
Non-aqueous liquid: any organic liquid with <15% settleable solids.	Other: Not assigned as a separate matrix from waters.
Biological tissue: any sample from a biological origin such as fish tissue or plant material.	Tissue: would include tissue and plant samples.
Solids: includes soils, sediments, sludges and other matrices with >15% settleable solids	Soils: includes soils, sediments, sludges; other solid materials such as wood, metal, etc. may fall under another heading.
Chemical waste: a product or by product of an industrial process that results in a matrix not defined above.	Oil: includes any non-solid material not classified as waters.
Air: vapor samples including those contained within sorbent tubes, filters or other devices.	Air: vapor samples including those contained within sorbent tubes, filters, or other devices.
No corresponding matrix to wipe; wipes would be included in with solids.	Wipe: includes wipe samples or swabs taken to check for surface contamination.

7. Sample Collection, Preservation, and Handling

7.1. Acceptable sample preservation, containers, and hold times are located in Pace Analytical Services' Quality Manual, the laboratory's method SOP or in the applicable test method. Samples are stored separately from all standards and reagents and any known highly contaminated samples.

NOTE: To avoid contamination, no food or drink products can be located near the areas where samples are unpacked, labeled, or staged.

7.2. Sample Storage – See Section 12.3 for general storage guidelines.

8. Equipment and Supplies

Table 8.1

Equipment/Supplies	Description/ Comments
Sample Labels	
Thermometers	Infrared, digital, NIST traceable
Sample storage cooling units	Capable of holding required storage temperatures
Chain-of-Custody forms	
Sample Condition Upon Receipt Form (SCURF)	
pH Paper	
Label Printer	
LIMS computer system	EPIC Pro
Disposable pipettes	
Sample containers	C&G, SCI/SPEC, Daniels Scientific

9. Reagents and Standards

9.1. All reagents used in this procedure must be labeled with:

- Laboratory reagent identification number
- Unless otherwise noted, the name and concentration of the reagent
- Date the reagent was received, opened and, as needed, prepared
- Person preparing reagent
- Expiration date

9.2. **Reagents**

Table 9.1 – Sample Preservation Reagents

Reagent	Formula	Concentration
Sulfuric Acid	H_2SO_4	Concentrated
Nitric Acid	HNO_3	Concentrated
Hydrochloric Acid	HCl	Concentrated
Sodium Hydroxide	NaOH	50% or Pellets
Sodium Thiosulfate	$Na_2S2O_3 \cdot 5H_2O$	0.02% (0.2g / 1 liter DI water)
Zinc Acetate Solution (for sulfide)		
Methanol	MeOH	Purge and Trap Grade
Ascorbic Acid (for cyanide)		

9.3. For acids, bases and other reagents obtained from other laboratory departments, this information is located in the department reagent preparation log. In the event that these reagents are managed within the Sample Receiving group, the department must maintain its own reagent preparation log.

9.4. Some Pace labs use pre-preserved sample containers. In this case, documentation must be maintained for bottleware and preservation traceability.

10. Calibration

10.1. Thermometers, IR-Guns, and other equipment used for measuring temperatures must be calibrated according to the most current revision of the Support Equipment SOP S-ALL-Q-013.

11. Procedure

11.1. **Sample Receipt**

11.1.1. The laboratory receives client samples via three major methods: mail/commercial delivery service, Pace Analytical courier/field services and hand delivery.

11.1.2. Pace labs use courier services that pick up client samples on either a regular schedule or on an as-needed basis as communicated by Project Managers or by the client.

When the client is present during courier pick-up, the client signs the chain-of-custody (COC) relinquishing custody to the courier. The courier signs the COC as accepting the samples and provides the client with a copy of the COC. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab.

If the client is not present during courier pick-up, the courier signs the COC as accepting the samples and leaves a copy of the COC for the client. If a client also has a sample log in use, the

courier must sign and date the log when the samples are picked up. When the courier returns to the lab with the client samples, the courier signs the COC as relinquishing the samples to the lab. The date/time of delivery to the lab by the courier is the official date/time received by the lab (analogous to the official date/time of receipt by an outside commercial carrier or courier).

To ensure the sample security, the Pace courier custody seals all the coolers being picked up and the courier vehicle is locked at each client pick-up location.

11.1.3. The chain of custody (COC) (see Attachment I) is signed immediately upon receipt of the samples from the client. If the client drops off the samples or they are picked up by the Pace courier, a copy of the signed COC is given to the client at that time. If samples are received via commercial carrier or mail delivery, the COC should be signed immediately when the cooler or package is opened and ultimately placed in the project file. The delivery date and time is considered the date/time received.

11.1.4. Sample receiving personnel should review the COC for any evidence of rush turnaround requests and analyses with short hold times. Projects that fall under these conditions should be given immediate attention. The project manager responsible for that client should be alerted in the event that they have not already alerted the laboratory to the project as it may be possible that the client did not pre-schedule the project. Once the sample(s) are received and logged into the LIMS, the sample technician and project manager will coordinate the notification and delivery of samples to the laboratory.

11.1.5. **Sample Acceptance Policy** - This section constitutes the laboratory's sample acceptance policy. Copies of this policy should be provided, in the form of a letter, fax or e-mail to each client or sampler, as necessary. Samples are considered acceptable if they meet the following criteria:

- There is proper, full, and complete documentation (i.e. chain-of-custody) including:
  - Unique client sample identification. Sample containers are labeled using unique client sample identifications (traceable to the chain-of-custody or other documentation) on durable, waterproof labels or equivalent.
  - Location of sampling (site), time and date of sample collection;
  - Sampler's name and signature;
  - Preservative used (if any);
  - Sample type (matrix);
  - Requested analyses;
  - Any special analysis requirements
- Appropriate sample containers have been used.
- Holding times have not been exceeded upon receipt (holding times are available in Attachment IV). If they have been exceeded, client permission to proceed is required.
- Adequate sample volume has been received for all tests requested (if not, client permission to proceed is required). For data packages requiring quality control samples to be analyzed on client specific samples, the client must include enough sample to complete the QC samples as well.
- When there is insufficient sample to complete the QC samples and the client does not wish to send more sample or more sample cannot be obtained because of sample volume

available or holding time issues, the lack of appropriate volume or weight is noted as a sample acceptance policy deviation on the final report. Batch quality control samples will be used in place of project-specific quality control samples.

- Samples that require sub-ambient thermal preservation are considered acceptable if they are within +/- 2.0 °C of the required temperature (for samples needing to be at 4.0 °C, the acceptable range is just above freezing to 6.0 °C, as defined by NELAC). The sample cooler (ice chest) temperature is recorded directly on the COC. Samples received outside of this criterion must have a notation on the COC and/or on the Sample Condition Upon Receipt Form (SCURF) indicating that the temperature was outside of criteria.
- Samples that are delivered to the lab immediately after collection are considered acceptable if there is evidence (i.e. samples arrive packed with ice) that the chilling process has begun. If samples arrive at temperatures that are outside these requirements, the client will be notified and analysis will NOT proceed unless otherwise directed by the client. Data will be appropriately qualified.

11.1.6. Open the cooler and verify the temperature of the samples by taking the temperature of the temperature blank. If there is no temperature blank in the cooler, measure the temperature of a representative sample bottle using the infrared (IR) thermometer gun. A representative sample will reflect an "average" condition of the samples in the cooler and, depending on the manner in which they are packed, may not necessarily be in direct contact with the cooling material.

NOTE: If an IR gun is used, the temperature should be taken from an opaque surface such as the bottle label. Measurements taken through a transparent surface (clear or amber glass) may not be reliable and should incorporate a specific temperature correction factor for that surface reading.

11.1.7. Record the temperature on the COC (example in Attachment I) and/or SCURF (example in Attachment II). In addition, record the type of "ice" used for packing the cooler (i.e. wet ice, "blue ice", gel packs, etc.).

11.1.8. If samples within a project are spread over multiple coolers and one or more of the coolers are outside of the temperature criteria, then the contents of the cooler must be itemized and the samples and sample containers affected by the out-of-control temperature must be listed on the SCURF for inclusion with the final report. This itemization must be retained in the project file for future reference.

11.1.9. Unpack the cooler and chain of custody (COC). Organize the samples, grouped by client sample ID, according to the order on the COC. Review COC against samples to make sure the bottles received match the analysis requested. All anomalies must be recorded on the SCURF.

- The items that must be checked at a minimum if the lab receives coolers late or will not unpack a cooler until the following day are; take the temperature of the samples in the cooler, sign the COC and check for short hold analyses.

11.1.10. Discard any ice or water that remains in the cooler and the packing material used to secure the samples. Water or ice should be discarded down a drain that connects to the local sewer. Packing materials should be placed in the garbage. If a sample container was broken, the contents remaining in the cooler MUST be discarded in a manner consistent with the hazardous waste handling standard operating procedure.

11.1.11. **pH Verification Instructions performed by Sample Control**

- The pH of the sample must be verified on all preserved sample bottles requiring pH preservation (see exceptions below).

- Open each preserved bottle (except as noted below). Use a new disposable pipette, a stirring bar or another inert utensil to withdraw a small portion of the sample. Dispense the aliquot on a sample specific narrow-range pH strip and check the pH.

  NOTE: Do not check the pH of samples for coliform, volatiles, TOC, WI-DRO, oil and grease, or hexane extractables (method 1664). These analyses will be checked by the analyst at the bench and should not be opened by sample management personnel

Table 11.1 – General pH Preservation Requirements by Preservative

Sample Preservatives	Sample pH Requirement
HCl	must be less than 2
HN03	must be less than 2
H2SO4	must be less than 2
NaOH	must be greater than 12
ZnAcetate & NaOH	must be greater than 9

- If the pH is not within the required range, indicate the anomaly on the SCURF form or on the COC. If all bottles are unpreserved for a sample, write N/A in the section of the SCURF.

11.1.12. **pH Preservation Adjustments – Insert if adjustments are performed by Sample Control**

- If a sample container does not meet the pH preservation required, the pH of the sample must be recorded on the COC or SCUR. Additional preservative is added so that the preservative content is <1% of the sample container volume. The sample is mixed and the pH is taken again. The new pH reading is also recorded on the COC or SCUR along with the amount, type and lot number of the preservative added. In addition, the sample container is marked with the preservative added, volume added, date, time and initials of the technician. If a metals sample must be acidified, it must be held for 24 hours before it can be processed.

11.1.13. **Total Residual Chlorine Verification Instructions** - Total residual chlorine must be verified at the time of receipt or at the bench as required by the method or individual state regulatory agency for certain analyses (see Table 11.2). Do not check the sample bottles for those analyses listed in 11.1.10.

- Open the appropriate sample container. Utilizing a new disposable pipette, stirring bar or other inert utensil; withdraw a small portion of the sample. Dispense the aliquot on a sample specific residual chlorine test strip.
- If any chlorine is detected, regardless of amount, note the information on the COC, SCURF or analytical bench sheet.

Table 11.2 – Analyses requiring Residual Chlorine Verification

Analyses
Ammonia (NH3)
Nitrate (NO3)
TKN
Cyanides

11.1.14. Note any discrepancies pertaining to samples as defined by the sample acceptance policy detailed above on the COC or SCURF. Any discrepancies involving temperature, preservation, hold time, collection dates and times, sample volume, sample containers, and unclear analysis, must be reported to project management as soon as possible.

11.1.15. For short hold samples, the laboratory is notified and the samples are staged per section 12.3.

Table 11.3 – Analyses with Hold Times Less Than 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Nitrite (unpreserved)	If Preserved, reported as NO3+NO2
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

11.2. Sample Login

11.2.1. Rush projects and/or projects with short holds should be logged in first. After these projects have been addressed, projects should be addressed on a first in, first out basis.

11.2.2. Clients and Project Profiles are created in EPIC Pro as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup*. Projects are logged as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login*.

11.2.3. Tests are assigned as per as per Training Document T-ALL-IT-002 *EPIC Pro 02: Client Setup,* and as per Section 1 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*

11.2.4. Generate sample labels and Sample Receipt Form (SRF) (see Attachment III).

- Local SRF generation is as per Section 3 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*
- Local sample label generation is as per Section 2 of Training Document T-ALL-IT-005 *EPIC Pro: Login.*

11.2.5. Attach the sample labels to the appropriate sample bottles.

- Sample Management must make sure all sample ID's match COC. Samples are staged on the counter in rows by Sample ID. All sample containers are recorded on COC.

- Sample labels are printed in Sample Management. One label is printed per sample container, except for VOA sample containers where two labels are printed for each container.
- The label is placed onto the side of the sample container. On VOC sample containers, one is placed onto the side and one is placed onto the cover.

11.2.6. The project manager must review and verify the following information by comparing the COC to SRF. Some of this information may not be provided by the client and those fields should be left blank.

- Report Recipient
- Invoice Recipient
- Additional Report Recipient
- PO#
- Project Name
- Project Number
- Requested Due Date
- Sample ID
- Matrix
- Collection Date & Time
- Received Date & Time
- Analysis: Double check compound lists
- Price
- Region Codes
- Work Region % Split (for Pace internal subcontracted work)
- Has Subbed Work been shipped

11.2.7. If any samples require analyses performed outside of the laboratory, prepare the samples for subcontracting according to the procedures listed in the SOP describing the subcontracting of analytical services SOT-ALL-C-003 most current revision.

11.3. **Sample Storage**

11.3.1. While awaiting login on the day received, samples may remain in the shipping cooler as received prior to login. Once unpacked, samples will be logged into the LIMS in a timely manner and returned to appropriate storage conditions as soon as possible. For the exceptional case where samples are not logged in the day they were received, they must be stored under appropriate temperature-controlled conditions until login takes place. In all cases, the same temperatures must be taken as soon after receipt as possible and the samples stored so as to maintain the required storage conditions while awaiting log-in.

11.3.2. Once logged into the LIMS and labeled, samples are placed in the appropriate storage areas. Specific temperature requirements are outlined in the analytical methods, but general guidelines are outlined below:

- Short hold samples are placed in the short hold storage area or delivered directly to the laboratory.

Volatile Analyses

- Aqueous samples are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved in methanol are stored by receiving date or by project number in a segregated volatiles cooler. Associated trip blanks are stored with the samples.
- Soil and other solid samples received preserved with deionized water and a stir bar, are stored by receiving date or by project number in a segregated volatiles freezer. Associated trip blanks are stored with samples.
- Soil and other solid samples received in 4oz containers or similar bottleware must be preserved within 48 hours. In order to preserve these samples, it is necessary to collect a 5g aliquot of the sample and transfer it to a 40mL vial. One of the following preservation options must be utilized:
  - The 5g aliquot is preserved with a stir bar, 10mL of deionized water and a stir bar, or 10mL of sodium bisulfate and a stir bar and stored in a freezer until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be immediately extracted with methanol and stored in a segregated volatiles cooler until analysis, or
  - Within 48 hours of collection in the field, the 5g aliquot can be preserved with 10mL of deionized water and a stir bar, stored in a segregated volatiles cooler and analyzed within 48 hours of collection.

General Chemistry and Semi-volatile Analyses

- Waters and other liquid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.
- Soils and other solid samples are staged by receiving date or by project number on the shelves in the appropriate sample storage cooler.

Metals

- Solids and Liquids: These samples are staged by receiving date or by project number on designated shelving in the laboratory or appropriate designated area. These samples may be stored at ambient temperature unless Hexavalent Chromium analysis is needed or the matrix of the samples are solids. If Hexavalent Chromium analysis will be performed, the samples are staged by receiving date or by project number in the appropriate sample storage cooler.

11.4. Disposal of Unconsumed Samples

Refer to the laboratory standard operating procedure for waste handling and disposal SOT-S-ALL-S-002, most current revision.

12. Quality Control

12.1. For any sample received at the laboratory that does not meet the sample acceptance, hold time or preservation criteria, the client must be contacted by project management and advised of the situation.

12.1.1. If the client instructs the laboratory to proceed with the analysis, all appropriate personnel/departments must be informed and the client approval must be documented on the SCURF or COC. Data will be appropriately qualified.

12.1.2. The client may also instruct the laboratory to preserve the samples at the laboratory prior to proceeding with analysis. This must be documented on the COC or the SCURF, and should be noted in the final laboratory report.

12.2. All supporting documentation related to sample custody must be retained by the laboratory. This includes; memorandums, fax transmissions, all paperwork received with the COC and copies of email transmissions.

12.3. **Documenting Discrepancies during receipt of samples.**

12.3.1. The following are examples of client discrepancies that need to be documented on the appropriate paperwork (i.e. SCURF).

- Lost samples/insufficient sample volume
- Broken or missing bottles
- Missing COC
- Mislabeled bottles
- Preservation error
- Missing sample related details (date, time, sample type)

12.3.2. Pace sample management discrepancies will be documented on the SCURF, COC or within the project files. Discrepancies attributable to errors and omissions on the part of the laboratory will be addressed and resolved through the formal corrective action process.

13. Method Performance

13.1. Not Applicable

14. Pollution Prevention and Waste Management

14.1. In order to minimize the amount of waste generated during this procedure, analyst should prepare reagents in an amount that may be used in a reasonable amount of time (i.e. before a reagent expires).

14.2. The Chemical Hygiene Plan/Health and Safety Plan contains additional information on pollution prevention.

15. References

15.1. Pace Quality Manual - Pace Analytical Services, Inc., current revision.

15.2. SW-846, Test Methods for Evaluating Solid Waste Physical/Chemical Methods, USEPA, current revision.

15.3. National Environmental Laboratory Accreditation Conference (NELAC), Quality Systems Chapter 5; current revision.

15.4. American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1995, Standard Methods for the Examination of Water and Wastewater, A.E. Greenberg, L.W. Clesceri, A.D. Eaton and M.A.H. Franson, eds., 19th ed., American Public Health Association, Washington D. C.

15.5. U.S. Environmental Protection Agency, 1983, Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio.

15.6. U.S. Environmental Protection Agency, 1988, Methods for Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, Environmental Monitoring Systems Laboratory, Cincinnati, Ohio.

15.7. Code of Federal Regulations, Title 40, 72FR11239; March 12, 2007

15.8. Code of Federal Regulations, Title 40, 72FR14220; March 26, 2007

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I – Chain of Custody, Form F-ALL-Q-020

16.2. Attachment II – Sample Condition Upon Receipt Form, Form F-ALL-C-003

16.3. Attachment III – Sample Receipt Form (SRF), example

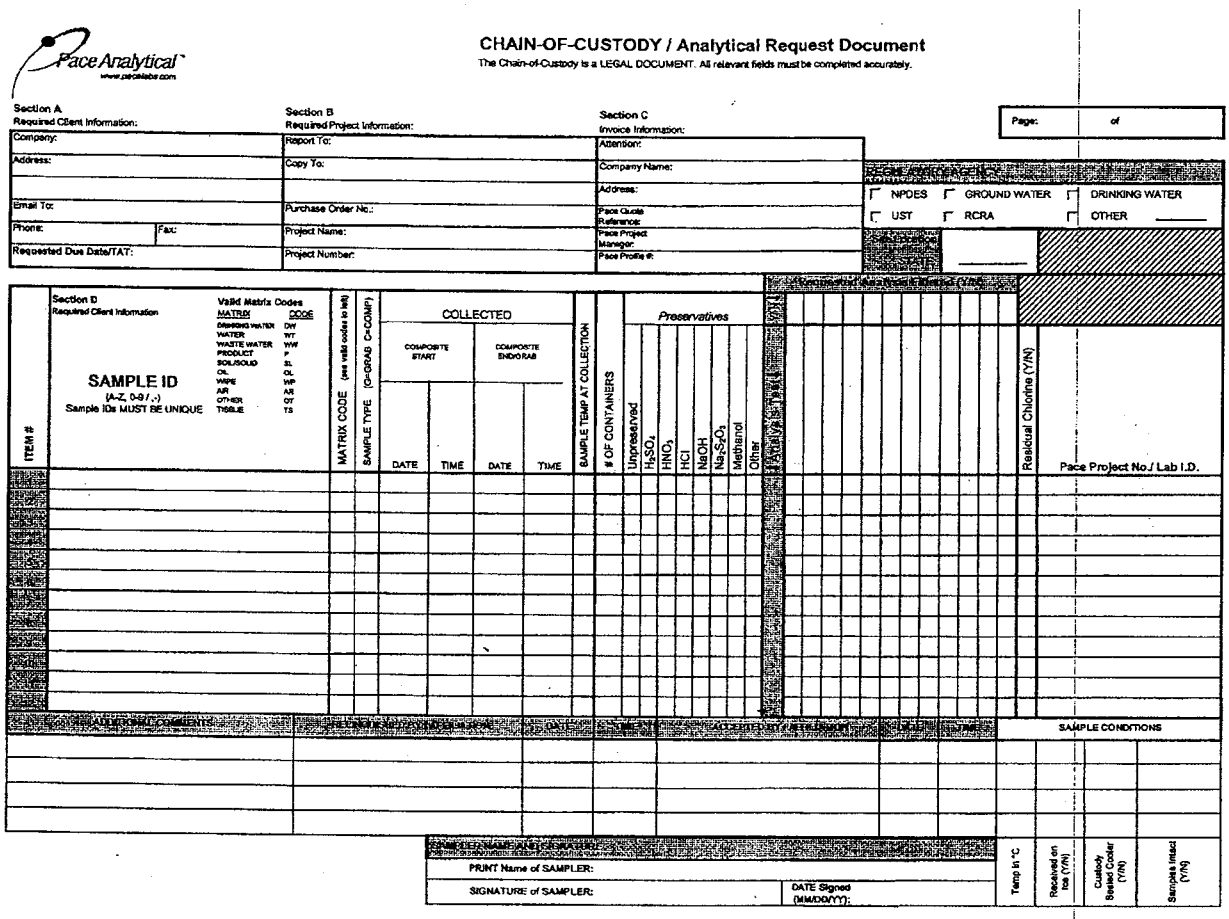
16.4. Attachment IV – Method Hold Time, Container and Preservation Guide

17. Revisions

Document Number	Reason for Change	Date
ALL-C-001-rev.0	New	12Jul2004
ALL-C-001rev.1	Removed information on waste and disposal and referred to ALL-S-002, *Waste Handling* Removed information on subcontracting samples and referred to ALL-C-003, *Subcontracting Samples* Removed information on residual chlorine testing in sample management. Those laboratories that require or perform this test in sample management, will include the information in their local addenda Added a general reference to the type of containers purchased in 9.1.10 Added information on the re-use of returned empty sample containers in section 12.1.4 Added shelf life criteria for trip blanks in 12.1.13 Provided more detail on how to check pH preservation in 12.2.8 Added Attachment I, II, III	30Mar2005

SOT-ALL-C-001rev.00	Converted to SOP Template Removed bottle order preparation details for conversion to separate SOP Template Updated COC form Updated SCUR form Included requirement to add Bottle Lot #s to the Bottle Order Form Added Attachment IV –Method Hold Times	28Dec2006
SOT-ALL-C-001-rev.01	Section 1: removed reference to bottle preparation (material was previously moved to another SOP). Section 4.1: reworded second sentence (SR personnel cannot ensure that there will not be cross-contamination). Section 7: removed responsibility section. Responsibilities are listed throughout the SOP and are listed in the Quality Manual. Renumbered subsequent sections, tables and references in SOP. Added section 9.4 regarding the use of pre-preserved containers. Section 10.1: removed specific ALL SOP reference and added ability to add in lab-specific SOP reference. Table 11.2: added cyanides per Client Services 3P meeting notes. Section 15: updated references where applicable. Section 11.1.3: specified that the delivery date and time is the date received. Added new section 11.1.2 regarding courier service and indicated when the official date/time of receipt is. Renumbered rest of the items in this section. Section 11.1.5: sixth bullet point. Added line where labs can add in lab-specific temperature ranges or language if different from that stated. Section 11.1.6: revised the 'two to five sample average' wording with regards to taking sample temperature to 'a representative sample'. Added red lettered sentence about adding local procedure if different from that listed. Section 11.1.7: removed repetitive sentence regarding taking average temperature. Section 11.1.8: reworded for clarity. Section 11.1.9: added editable bullet point for when coolers are not unpacked until the following day. Section 11.1.12: added in possible template language regarding pH. adjustments. Labs have the ability to use this language or add their own procedure. Section 11.3.1: added language to state that samples should be kept in cold storage as much as physically possible. Table 11.3: added gross alpha and residual chlorine to short hold table. Section 15: added CFR references for Method Update Rule. Attachments: replaced COC, SCUR and SRF with current versions. Attachment IV: replaced existing chart with the revised chart from the Quality Manual.	11Dec2008

Attachment I – Example Chain-of-Custody Form



Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY
☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / , -) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER:
SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Attachment II – Example Sample Condition Upon Request Form

Sample Condition Upon Receipt

Pace Analytical

Client Name: _____ Project # _____

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals Intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used _____ **Type of Ice:** Wet Blue None ☐ Samples on ice, cooling process has begun

Cooler Temperature _____ **Biological Tissue is Frozen:** Yes No **Date and Initials of person examining contents:** _____

Temp should be above freezing to 6°C **Comments:**

Chain of Custody Present:	☐Yes ☐No ☐N/A	1.	
Chain of Custody Filled Out:	☐Yes ☐No ☐N/A	2.	
Chain of Custody Relinquished:	☐Yes ☐No ☐N/A	3.	
Sampler Name & Signature on COC:	☐Yes ☐No ☐N/A	4.	
Samples Arrived within Hold Time:	☐Yes ☐No ☐N/A	5.	
Short Hold Time Analysis (<72hr):	☐Yes ☐No ☐N/A	6.	
Rush Turn Around Time Requested:	☐Yes ☐No ☐N/A	7.	
Sufficient Volume:	☐Yes ☐No ☐N/A	8.	
Correct Containers Used:	☐Yes ☐No ☐N/A	9.	
-Pace Containers Used:	☐Yes ☐No ☐N/A		
Containers Intact:	☐Yes ☐No ☐N/A	10.	
Filtered volume received for Dissolved tests	☐Yes ☐No ☐N/A	11.	
Sample Labels match COC:	☐Yes ☐No ☐N/A	12.	
-includes date/time/ID/Analysis Matrix: _____			
All containers needing preservation have been checked.	☐Yes ☐No ☐N/A	13.	
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A		
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed	Lot # of added preservative
Samples checked for dechlorination:	☐Yes ☐No ☐N/A	14.	
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☐N/A	15.	
Trip Blank Present:	☐Yes ☐No ☐N/A	16.	
Trip Blank Custody Seals Present	☐Yes ☐No ☐N/A		
Pace Trip Blank Lot # (if purchased): _____			

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

F-ALLC003rev.3, 11September2006

Attachment III – Example Sample Receipt Form

Sample Receipt Form

Pace Analytical Services, Inc.
Indiana

Pace Analytical
www.paceiabs.com

Sample Acknowledgement Recipients:

Email:

Bill to:

Final Report Recipients:

Line Item Descriptions:
[4] ' Water Short VOC

Client P O No:
Phone: 1(317)875-5894
Project Manager: Pheadra Zucksworth
Client Project ID:

Lab Project No: 5018684
Project Deliverables Type: Standard Report
Project Report Due Date: 09/25/08
Profile: 907

Lab Smp ID: 5018684001 **Client Smp ID: RW-3:G090908** Collected Date: 09/09/08 11:25
Proj Smp No: 1 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

Auxiliary Data:

Consultant Project Number:	NA	ENFOS Project (AAAAA-0000):	
Site ID/Facility Number:		Phase:	01
Gem Portfolio:	CENTRAL	SubPhase/Task:	03
State of Sample Collection:	OH	Cost Element:	05
Consultant Name:	URS	RCOP:	no
Rush Charges:	0		

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Sub Total - Sample 208364 $27.00

Lab Smp ID: 5018684002 **Client Smp ID: RW-4:G090908** Collected Date: 09/09/08 11:00
Proj Smp No: 2 Matrix: Water Smp Type: PS Line Item: 4 Received Date: 09/11/08 10:19
Location: OH BUSTR

PARAMETER	METHOD	UNIT PRICE	WR	SPL	%
8260 WUST - 8260 MSV UST	EPA 8260	$27.00			

COMPOUND	PQL	UNITS
Benzene	5	ug/L
Ethylbenzene	5	ug/L
Methyl-tert-butyl ether	4	ug/L
Toluene	5	ug/L
Xylene (Total)	10	ug/L

Attachment IV – Method Hold Time, Container and Preservation Guide

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
2, 3, 7, 8-TCDD	1613B	Soil	8oz Glass	None	90/40 Days
2, 3, 7, 8-TCDD	1613B	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	90/40 Days
2, 3, 7, 8-TCDD	8290	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	30/45 Days
Acidity	SM2310B	Water	Plastic/Glass	≤6°C	14 Days
Alkalinity	SM2320B/310.2	Water	Plastic/Glass	≤6°C	14 Days
Alpha Emitting Radium Isotopes	9315/903.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Anions by IC, including Br, Cl, F, NO_2, NO_3, SO_4	300.0/300.1/ SM4110B	Water	Plastic/Glass	≤6°C	Br, Cl, F, SO_4 (28 Days) NO_2, NO_3 (48 Hours)
Aromatic and Halogenated Volatiles	8021	Soil	5035 vial kit	See 5035 note*	14 days
Aromatic and Halogenated Volatiles	601/602/8021	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Bacteria, Total Plate Count	SM9221D	Water	Plastic/WK	≤6°C; $Na_2S_2O_3$	24 Hours
Base/Neutrals and Acids	8270	Soil	8oz Glass	≤6°C	14/40 Days
Base/Neutrals and Acids	625/8270	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Base/Neutrals, Acids & Pesticides	525.1/525.2	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/30 Days
BOD/cBOD	SM5210B	Water	Plastic/Glass	≤6°C	48 hours
BTEX/Total Hydrocarbons	TO-3	Air	Summa Canister	None	14 Days
BTEX/Total Hydrocarbons	TO-3	Air	Tedlar Bag	None	48 Hours
Chloride	SM4500Cl/9250/ 9251/9252	Water	Plastic/Glass	None	28 Days
Chlorinated Herbicides	8151	Soil	8oz Glass Jar	≤6°C	7/40 Days
Chlorinated Herbicides	8151	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Chlorinated Herbicides	515.1	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	14/28 Days
Chorine, Residual	SM4500Cl	Water	Plastic/Glass	None	15 minutes
COD	SM5220C/ 410.3/410.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Color	SM2120B,C,E	Water	Plastic/Glass	≤6°C	48 Hours
Condensable Particulate Emissions	EPA 202	Air	Solutions	None	6 Months
Cyanide, Reactive	SW846 chap.7	Water	Plastic/Glass	None	28 Days
Cyanide, Total and Amenable	SM4500CN/9010/ 9012/335.4	Water		pH>12 NaOH; ≤6°C; ascorbic acid if Cl present	14 Days, 24 Hours if Sulfide present
Diesel Range Organics	8015	Soil	8oz Glass Jar	≤6°C	14/40 Days
Diesel Range Organics	8015	Water	1L Glass	≤6°C	7/40 Days
Dioxins & Furans	TO-9	Air	PUF	None	30/45 Days
EDB & DBCP	504.1/8011	Water	40mL vials	≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Explosives	8330/8332	Water	1L Glass	≤6°C	7/40 Days
Explosives	8330/8332	Soil	8oz Glass Jar	≤6°C	14/40 Days
Ferrous Iron	SN3500Fe-D	Water	Glass	None	Immediate
Flashpoint/Ignitability	1010/1030	Water	Plastic/Glass	None	28 Days
Fluoride	SM4500Fl-C,D	Water	Plastic	None	28 Days
Gamma Emitting Radionuclides	901.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Gas Range Organics	8015	Water	40mL vials	pH<2 HCl	14 Days
Gasoline Range Organics	8015	Soil	5035 vial kit	See 5035 note*	14 days
Gross Alpha (NJ 48Hr Method)	NJAC 7:18-6	Water	Plastic/Glass	pH<2 HNO_3	48 Hrs
Gross Alpha and Gross Beta	9310/900.0	Water	Plastic/Glass	pH<2 HNO_3	180 days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Haloacetic Acids	552.1/552.2	Water	40mL Amber vials	NH_4Cl; ≤6°C	14/7 Days
Hardness, Total ($CaCO_3$)	SM2340B,C/130.1	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Hexavalent Chromium	7196/218.6/ SM3500Cr	Water	Plastic/Glass	≤6°C	24 Hours
Hydrogen Halide & Halogen Emissions	EPA 26	Air	Solutions	None	6 Months
Lead Emissions	EPA 12	Air	Filter/Solutions	None	6 Months
Low Level Mercury	1631	Water	Glass	BrCl	90 days (if preserved and oxidized)
Mercury	7471	Soil	8oz Glass Jar	≤6°C	28 days
Mercury	7470/245.1/245.2	Water	Plastic/Glass	pH<2 HNO_3	28 Days
Metals	7300/7303	Air	Filters	None	6 Months
Metals (and other ICP elements)	6010	Soil	8oz Glass Jar	None	6 months
Metals (and other ICP elements)	6010/6020/200.7/ 200.8	Water	Plastic/Glass	pH<2 HNO_3	6 Months
Methane, Ethane, Ethene	RSK-175	Water	40mL vials	HCl	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Summa Canister	None	14 Days
Methane, Ethane, Ethene	EPA 3C	Air	Tedlar Bag	None	48 Hours
Nitrogen, Ammonia	SM4500NH3/350.1	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Kjeldahl	SM4500-Norg; 351.1/351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrate	SM4500-NO3/ 352.1	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Nitrate & Nitrite	SM4500-NO3/ 353.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Nitrogen, Nitrite	SM4500-NO2/ 353.2	Water	Plastic/Glass	≤6°C	48 Hours
Nitrogen, Organic	SM4500-Norg/ 351.2	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Non-Methane Organics	EPA 25C	Air	Summa Canister	None	14 Days
Non-Methane Organics	EPA 25C	Air	Tedlar Bag	None	48 Hours
Odor	SM2150B	Water	Glass	≤6°C	24 Hours
Oil and Grease/HEM	1664A/SM5520B/ 9070	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Organochlorine Pesticides & PCBs	TO-4	Air	PUF	None	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082/608	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Organochlorine Pesticides & PCBs	8081/8082	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Soil	8oz Glass Jar	≤6°C	14/40 Days
Organophosphorous Pesticides	8141	Water	1L Amber Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days
Oxygen, Dissolved (Probe)	SM4500-O	Water	Glass	None	15 minutes
Paint Filter Liquid Test	9095	Water	Plastic/Glass	None	N/A
Particulates	PM-10	Air	Filters	None	6 Months
Permanent Gases	EPA 3C	Air	Summa Canister	None	14 Days
Permanent Gases	EPA 3C	Air	Tedlar Bag	None	48 Hours
pH	SM4500H+B/9040/ 9041/150.2	Water	Plastic/Glass	None	15 minutes
Phenol, Total	420.1/420.4/9065/ 9066	Water	Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Phosphorus, Orthophosphate	SM4500P/365.1/365.3	Water	Plastic	Filter; ≤6°C	Filter within 15 minutes, Analyze within 48 Hours
Phosphorus, Total	SM4500P/ 365.1/365.3/365.4	Water	Plastic/Glass	pH<2 H_2SO_4; ≤6°C	28 Days
Polynuclear Aromatic Hydrocarbons	TO-13	Air	PUF	None	7/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Soil	8oz Glass Jar	≤6°C	14/40 Days
Polynuclear Aromatic Hydrocarbons	8270 SIM	Water	1L Glass	≤6°C; $Na_2S_2O_3$ if Cl present	7/40 Days

Parameter	Method	Matrix	Container	Preservative	Max Hold Time
Radioactive Strontium	905.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-226 Radon Emanation Technique	903.1	Water	Plastic/Glass	pH<2 HNO_3	180 days
Radium-228	9320/904.0	Water	Plastic/Glass	pH<2 HNO_3	180 days
Silica, Dissolved	SM4500Si-D	Water	Plastic	≤6°C	28 Days
Solids, Settleable	SM2540F	Water	Glass	≤6°C	48 Hours
Solids, Total	SM2540B	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Dissolved	SM2540C	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Suspended	SM2540D	Water	Plastic/Glass	≤6°C	7 Days
Solids, Total Volatile	SM2540E	Water	Plastic/Glass	≤6°C	7 Days
Specific Conductance	SM2510B/9050/120.1	Water	Plastic/Glass	≤6°C	28 Days
Stationary Source Dioxins & Furans	EPA 23	Air	XAD Trap	None	30/45 Days
Stationary Source Mercury	EPA 101	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source Metals	EPA 29	Air	Filters	None	6 Months, 28 Days for Hg
Stationary Source PM10	EPA 201A	Air	Filters	None	6 Months
Stationary Source Particulates	EPA 5	Air	Filter/Solutions	None	6 Months
Sulfate	SM4500SO4/9036/ 9038/375.2/ASTMD516	Water	Plastic/Glass	≤6°C	28 Days
Sulfide, Reactive	SW-846 Chap.7	Water	Plastic/Glass	None	28 Days
Sulfide, Total	SM4500S/9030	Water	Plastic/Glass	pH>9 NaOH; ZnOAc; ≤6°C	7 Days
Sulfite	SM4500SO3	Water	Plastic/Glass	None	15 minutes
Surfactants	SM5540C	Water	Plastic/Glass	≤6°C	48 Hours
Total Organic Carbon (TOC)	SM5310B,C,D/ 9060	Water	Glass	pH<2 H_2SO_4 or HCl; ≤6°C	28 Days
Total Organic Halogen (TOX)	SM5320/9020/ 9021	Water	Glass; no headspace	≤6°C	14 Days
Tritium	906.0	Water	Glass	pH<2 HNO_3	180 days
Turbidity	SM2130B/180.1	Water	Plastic/Glass	≤6°C	48 Hours
Uranium Radiochemical Method	908.0/ASTM D5174-97	Water	Plastic/Glass	pH<2 HNO_3	180 days
Volatiles	TO-14	Air	Summa Canister	None	30 Days
Volatiles	TO-14	Air	Tedlar Bag	None	48 Hours
Volatiles	TO-15	Air	Summa Canister	None	30 Days
Volatiles	8260	Soil	5035 vial kit	See 5035 note*	14 days
Volatiles	8260	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Volatiles	624	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days (7 unpreserved)
Volatiles	524.1/524.2	Water	40mL vials	pH<2 HCl; ≤6°C; $Na_2S_2O_3$ if Cl present	14 Days
Alaska DRO	AK102	Soil	8oz Glass	≤6°C	14/40 Days
Alaska DRO	AK102	Water	1L Glass	pH<2 HCl; ≤6°C	14/40 Days
Alaska RRO	AK103	Soil	8oz Glass	≤6°C	14/40 Days
Alaska GRO	AK101	Soil	5035 vial kit	See 5035 note*	14 Days
Alaska GRO	AK101	Water	40mL vials	pH<2 HCl; ≤6°C	14 Days

5035 Note: 5035 vial kit typically contains 2 vials water, preserved by freezing **or**, 2 vials aqueous sodium bisulfate preserved at 4°C, **and** one vial methanol preserved at ≤6°C **and** one container of unpreserved sample stored at ≤6°C.

Attachment IV – HOLD TIMES AND CHLORINE CHECKS

Analyses with Hold Times < 72 Hours

Short Hold Time	Analyses	Details
15 minutes	Field Parameters	pH, Dissolved Oxygen, Residual Chlorine, Ferrous Iron
6 Hours	Total / Fecal Coliform (MPN, MF)	
24 Hours	Hexavalent Chromium	Aqueous Samples Only
30 Hours	Total Coliform (Presence / Absence)	
48 Hours	Color	
48 Hours	MBAS	
48 Hours	Nitrate (unpreserved)	
48 Hours	Nitrite (unpreserved)	
48 Hours	Ortho –phosphate	
48 Hours	Settleable Solids	
48 Hours	Turbidity	
48 Hours	VOA - Soils by Unpreserved EPA5035	Jars, Encores, Sleeves
48 Hours	Gross Alpha (NJ 48hr method)-waters	EPA NJAC 7:18-6
72 Hours	3030C Metals	

Analyses Requiring Residual Chlorine Verification

Analyses	Details
Ammonia (NH_3)	Nutrient Bottle
Nitrate (NO_3)	Nutrient Bottle
Total Kjeldahl Nitrogen (TKN)	Nutrient Bottle
Total Phosphorus (TP)	Nutrient Bottle
Nitrate (unpreserved)	Unpreserved Bottle
Cyanide	

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STANDARD OPERATING PROCEDURE

Waste Handling and Management

Reference Methods: N/A

LOCAL SOP NUMBER:	S-CHR-S-002-rev.02
EFFECTIVE DATE:	Date of Final Signature
SUPERSEDES:	S-CHR-S-002-rev.01
SOP TEMPLATE NUMBER:	SOT-ALL-S-002-rev.02

APPROVALS

Jeff Graham, Laboratory General Manager — Date 9/27/11

Cheryl Johnson, Laboratory Quality Manager — Date 9/22/2011

Cheryl Johnson, Laboratory Hazardous Waste Coordinator — Date 9/22/2011

PERIODIC REVIEW

SIGNATURES BELOW INDICATE NO CHANGES HAVE BEEN MADE SINCE PREVIOUS APPROVAL.

Signature	Title	Date

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TABLE OF CONTENTS

SECTION PAGE

1. Purpose 3
2. Scope and Application 3
3. Summary of Method 5
4. Interferences 5
5. Safety 5
6. Definitions 5
7. Sample Collection, Preservation, and Handling 8
8. Equipment and Supplies 8
9. Reagents and Standards 9
10. Calibration 9
11. Procedure 9
    - 11.1. Generator EPA Identification Number 10
    - 11.2. Waste Generation and Class 11
    - 11.3. Waste Classification 11
    - 11.4. Waste Streams 12
    - 11.5. Waste Determination 12
    - 11.6. Laboratory Generated Satellite Waste and Sample Disposal 14
    - 11.7. Transferring Waste to Accumulation Area 15
    - 11.8. Soil Samples 15
    - 11.9. Elementary Neutralization 15
    - 11.10. Waste Storage Container Requirements 16
    - 11.11. Waste Documentation and Reporting 17
12. Quality Control 17
13. Method Performance 17
14. Pollution Prevention and Waste Management 18
15. References 18
16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc. 18
17. Revisions 18

1. Purpose

1.1. Pace Analytical Services, Inc. (Pace) acknowledges its obligation to the responsible management of the environment and its resources. Pace Management is committed to operating in such a way that meets or exceeds the state and federal laws governing waste management and encourages the use of best practices to reduce, reuse and recycle waste material where possible. This Standard Operating Procedure (SOP) documents the systems, processes and procedures that Pace Charlotte uses to manage generated wastes.

1.2. It is Pace's policy to minimize the amount of hazardous waste it produces and to reduce the hazardous properties of those wastes whenever practical within regulatory compliance. This can be achieved by periodic auditing of all processes producing hazardous waste; reduction of sample volume delivered by the client; return of excess sample material to clients whenever practical and economical; investigation of new technologies that might require smaller volumes of sample, or produce fewer or less hazardous by-products; implementation of lab cleaning procedures that reduce the volume of cleaning residue; recycling of hazardous materials; and investigation of new treatment technologies that are comprehensively destructive or are effective in reducing the volume or hazardous qualities of the wastes produced.

2. Scope and Application

2.1. This SOP is applicable to all processes at Pace Charlotte that involve generated waste, and is designed to assist its operations in adhering to regulations set forth in the following federal statutes: Resource Conservation and Recovery Act (RCRA), Clean Water Act (CWA), Toxic Substances Control Act (TSCA), and DOT Title 49, and Transportation (parts 100-199). Particular attention is given to local pretreatment standards covering discharges to publicly owned treatment works (POTW) when performing elementary neutralization on acidic and basic waste. The local standards are based in part upon provisions in the National Pretreatment Standards and Prohibited Discharge Standards.

2.2. The degree to which RCRA regulations apply to Pace facilities is dependent upon the generator status of the operation. Under the federal rules (state requirements may be more stringent or give the classes a slightly different name) there are three different classes of hazardous waste generators based upon the amount of waste generated in a month to month time frame.

Table 2.3. Waste Generator Class Limits

Hazardous Waste Generator Class	*Quantity of Hazardous Waste Generated per Month*	Generated Monthly Acute Hazardous Waste	Maximum Allowable Hazardous Waste Quantity on-site	Maximum Permitted Waste Accumulation Time
Cond. Exempt Small Quantity	*<100kg*	<1 kg	<1000kg	Unlimited
Small Quantity	*100-1000kg*	<1 kg	<6000kg	180 days (270 days if the waste must be sent >200 miles to TSDF)
Large Quantity	*>1000kg*	>1kg	Unlimited	90 days

Table 2.4. RCRA Requirements for Labs as a Function of Generator Status.

Requirement (40CFR)	CESQG	SQG	LQG
Waste Determination (262.11)	Applicable	Applicable	Applicable
Generation Rate Limits (261.5 and 262.34)	<100 kg/mo	100-1,000 kg/mo	1,000 kg/mo or greater
Accumulation Quantity Limit w/o Permit (261.5 and 262.34)	Not to exceed 1,000 kg at any time. Not to exceed 1 kg acute at any time	not to exceed 6,000 kg at any time	No limit
Accumulation Time (261.5 and 262.34)	No limit	180 days or 270 if waste is to be transported over 200 miles.	90 days
EPA ID Number (262.12)	Not required***; possible state requirement	Required	Required
Mark Containers with Start Date (262.34)	Not applicable	Applicable	Applicable
Mark Containers "Hazardous Waste" (262.34(a))	Not applicable	Applicable	Applicable
Air Emission Standards 40 CFR 265 Subpart CC	Not applicable	Not applicable	Applicable
Satellite Accumulation (262.34(c))	Not applicable	Applicable	Applicable
Use Manifests (262, Subpart B)	Not required; possible state requirement	Required	Required
Exception Reporting (262.42)	Not required	Required after 60 days. No TSDF notification requirement.	Required after 45 days. Notification of TSDF within 35 days.
Biennial Report (262.41)	Not required	Not required; possible state requirement	Required
Contingency Plan (265, Subpart D)	Not required, but OSHA (29 CFR 1910.38) requires emergency planning	Basic planning required in accordance with the standards in 262.34(d)(4) and (5) and 265, Subpart C as well as OSHA regulations	Full written plan in accordance with 265 Subpart D, is required by 262.34(a)(4) and OSHA regulations
RCRA Personnel Training (262.34 and 265.16)	Not required, but recommended	Basic training required by 262.34(d)(5)(iii)	Full compliance with the training requirements in 265.16 is required by 262.34(a)(4)
Storage Requirements (without permit) (262.34 and 265)	None, but OSHA regulations under 29 CFR 1910, Subparts H and N, apply, particularly 29 CFR 1910.106	Compliance with technical standards in Part 265, Subparts I and J; for containers and tanks is required by 262.34(d)(2) and (3) and OSHA regulations	Compliance with technical standards in Part 265, Subparts I, J, W, and DD, is required by 262.34(a)(1) and OSHA regulations
Recordkeeping Requirements (262.40)	Waste determinations and generation log required (notification of regulated waste activity, training records, manifests, and land disposal restriction notifications recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, and correspondence with local emergency responders (written contingency plan, weekly container inspection & periodic equipment maintenance logs, and RCRA training records recommended)	Notification of regulated waste activity, waste determinations, generation log, manifests, land disposal restriction notifications, exception reports, biennial reports, correspondence with local emergency responders, RCRA training records, and written contingency plan required (weekly container inspection is required & periodic equipment maintenance logs is recommended)
Waste "Designated Facility"	State-approved or RCRA permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler	RCRA-permitted facility or legitimate recycler
Land Disposal Restrictions (268.7)	Possible state requirement	Applicable	Applicable

3. Summary of Method

3.1. Pace facilities that generate waste must initially contact the EPA to obtain an ID number. Each unique type of generated waste is classified and characterized into waste streams according to procedures in 40 CFR 261. The amount of waste the facility generates determines the Generator Status of a lab, which in turn determines how long and how much waste can accumulate. Pace Charlotte is ultimately responsible for the waste it generates, and is required obey any and all regulations during the process of creating, accumulating, disposing, and releasing waste to a TSDF for final disposal. Documentation is kept to prove all regulations have been obeyed.

4. Interferences

4.1. Not applicable to this SOP.

5. Safety

5.1. The laboratory is responsible for maintaining a current awareness file of OSHA regulations regarding the safe handling of the chemicals specified in this method. A formal safety plan is also available to all employees. Gloves and eye protection should be routinely worn when handling reagents or samples. When qualified employees are transferring wastes, additional protection such as goggles, face shield, and lab apron are recommended.

5.2. MSDS sheets are located in a central location and should be consulted prior to handling samples and standards.

5.3. A hazard assessment must be completed per S-ALL-S-001 ***Hazard Assessments*** for waste areas to ensure proper PPE are utilized.

6. Definitions

6.1. Definitions of terms found in this SOP are described in the Pace Analytical Services Quality Manual, Glossary Section unless as noted below.

6.2. **Acutely Hazardous Waste** - A waste which is hazardous as identified with an (H) Hazard Code in the lists of Hazardous Waste in 40 CFR Part 261, Subpart D, Sections 261.30, 261.31 and 261.33.

6.3. **Clean Air Act** - The Federal Clean Air Act, 42 U.S.C. 7401, and amendments thereto amending 42 U.S.C. 1857 et.seq.

6.4. **Conditionally Exempt Small Quantity Generator** - A generator who produces no more than 100 kilograms of hazardous waste or one kilogram of acutely hazardous waste (or a total of 100 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar month. The total amount of hazardous waste which may be accumulated on-site is 1000 kilograms.

6.5. **Confined Space** – A space that is large enough and so configured that an employee can bodily enter and perform assigned work; and has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and is not designed for continuous employee occupancy.

6.6. **Container** - Any device material is stored, transported, treated, disposed of, or otherwise handled.

6.7. **Contingency Plan** - A document setting out an organized, planned, and coordinated course of action to be followed in case of fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

6.8. **Designated Hazardous Waste Storage Area** - Area used to hold hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere. This is the storage area into which hazardous waste from the laboratory (e.g., satellite waste) is moved.

6.9. **DOT** - The United States Department of Transportation.

6.10. **DTSC** – Department of Toxic Substances Control

6.11. **Elementary Neutralization Unit** – A device which: (1) is used for neutralizing wastes which are hazardous only because they exhibit the corrosivity characteristic defined in 40 CFR 261.22 or are listed in Subpart D of Part 261; and (2) meets the definition of tank, container, transport vehicle, or vessel in 40 CFR 260.10.

6.12. **EPA** - The United States Environmental Protection Agency.

6.13. **EPA Hazardous Waste Number** - The EPA number assigned to each EPA hazardous waste identified in 40 CFR Part 260, Subpart D - Lists of Hazardous Wastes.

6.14. **EPA Identification Number** - The site-specific number assigned to each generator, transporter, and TSDF upon approval of a notification form.

6.15. **Federal Clean Water Act** - 33 U.S.C. 1251, et. seq.

6.16. **Foreseeable Emergency** - Any fire, explosion, or sudden or non-sudden release of hazardous waste or hazardous waste constituents to the air, soil, or surface water, which could threaten human health or the environment.

6.17. **Generator** - Any person, by site who owns or operates a facility where hazardous waste is generated, i.e. Pace Analytical Services (Pace).

6.18. **Hazardous Waste Coordinator** - The Pace employee responsible for creating, guiding, and implementing all hazardous waste management operations.

6.19. **Hazardous Waste** - As defined in 40 CFR Part 261, Subparts B and C, a solid, semi-solid, liquid or contained gaseous waste, or any combination of these wastes:

6.19.1. Which, because of either quantity, concentration, physical, chemical, or infectious characteristics may:

6.19.1.1. Cause or contribute to an increase in mortality or an increase in irreversible or incapacitating reversible illness; or

6.19.1.2. Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of or otherwise mismanaged

6.19.2. Or which has been identified as having a characteristic of hazardous waste by the EPA using the criteria established under 40 CFR Part 261, Subpart C, or as listed under Sections 261.32, 261.32, and 261.33. Such wastes include, but are not limited to, those which are reactive, toxic, corrosive, ignitable, irritants, strong sensitizers or which generate pressure through decomposition, heat or other means. Such wastes do not include radioactive substances that are regulated by the Atomic Energy Act of 1954, as amended. A Waste is considered hazardous if it is listed or it fits into one of four categories. These categories are as follows:

6.19.2.1. Ignitable – (40CFR261.21, Waste Code D001) Having a flash point of less than 60°C/140°F.

6.19.2.2. Corrosive – (40CFR261.22, Waste Code D002) Having a pH of less than 2.0 or greater than 12.5.

6.19.2.3. Reactive – (40CFR261.23, Waste Code D003) Reactive wastes exhibit one or more of the following characteristics:

6.19.2.3.1. It is unstable and can undergo a violent change without detonating.

6.19.2.3.2. It can react violently with water.

6.19.2.3.3. When mixed with water it can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

6.19.2.3.4. It is cyanide or sulfide bearing waste that, when exposed to pH conditions between 2.0 and 12.5, can generate gases, vapors, or fumes that can present a danger to human health or the environment.

6.19.2.3.5. It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

6.19.2.3.6. It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

6.19.2.3.7. It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

6.19.2.4. EPToxic - A solid waste is EPToxic if, after being subjected to the EP Toxicity extraction, or TCLP analysis, the extract contains any of the listed contaminants in concentrations above the limits shown in Attachment 2. It is listed as a hazardous waste by the EPA (via 40 CFR 261.30, 261.31, 261.32, and 261.33).

6.20. **Hazardous Waste Constituent** - A substance, compound, or element listed as hazardous waste in EPA 40 CFR 261.

6.21. **Lab Pack Material** - A hazardous waste that does not match a listed Pace waste stream category.

6.22. **Large Quantity Generator** - Any generator who generates at a rate greater than 1000 kilograms of hazardous waste per month.

6.23. **Manifest** - As defined in 40 CFR Part 262, Subpart B, namely "the form used for identifying the origin, quantity composition, routing and destination of hazardous waste."

6.24. **Sample** - Except as provided below in 6.24.7, a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or composition, is not subject to any requirements of 40 CFR Part 261.5 or Parts 262 through 267 or Part 270 or Part 124 or to the notification requirements of Section 3010 of RCRA, when:

6.24.1. The sample is being transported to a laboratory for the purpose of testing; or

6.24.2. The sample is being transported back to the sample collector after testing; or

6.24.3. The sample is being stored by the sample collector before transport to a laboratory for testing; or

6.24.4. The sample is being stored in a laboratory before testing; or

6.24.5. The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

6.24.6. The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

6.24.7. In order to qualify for the exemption in 6.24.1 and 6.24.2 above, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

6.24.7.1. Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

6.24.7.2. Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

6.24.7.2.1. Assure that the following information accompanies the sample:

6.24.7.2.1.1. The sample collector's name, mailing address, and phone number;

6.24.7.2.1.2. The laboratory's name, mailing address, and phone number;

6.24.7.2.1.3. The quantity of the sample;

6.24.7.2.1.4. The date of shipment; and

6.24.7.2.1.5. A description of the sample.

6.24.7.2.2. Package the sample so that it does not leak, spill, or vaporize from its packaging.

6.24.7.2.3. This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in 6.22 above.

6.25. **Satellite Waste or Laboratory Satellite Waste** - Hazardous wastes created by Pace, as a result of organic or inorganic extractions, digestions, and analyses.

6.26. **Satellite Waste Container** - Any portable device used to accumulate laboratory generated waste prior to transfer to the hazardous waste storage area.

6.27. **Small Quantity Generator** - A generator who produces no more than 1000 kilograms of hazardous waste (or a total of 1000 kilograms of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or any acute hazardous waste) in a calendar monthly. The total amount of hazardous waste which may be accumulated on-site is 6000 kilograms.

6.28. **TSDF** - A Treatment/Storage/Disposal Facility.

6.29. **Universal Waste** – Commonly used items that are hazardous but can be recycled. These include fluorescent lights, computer monitors, etc.

6.30. **Waste Stream** - The generic profile of chemical and physical properties that satellite wastes exhibit.

7. Sample Collection, Preservation, and Handling

7.1. Not applicable to this SOP.

8. Equipment and Supplies

The following equipment is mandatory under RCRA guidelines unless otherwise denoted. Periodic review (not to exceed monthly) of availability of equipment and supplies below should be conducted to maintain an adequate and viable supply.

8.1. **Chemical Spill Control Neutralizers**: The waste room stores three types of bulk dry spill neutralizers: solvent, acid and base. They may be utilized by placing the dry neutralizer onto a liquid chemical spill. Neutralization is indicated by a prevalent color change.

8.2. **Communication Device**: Required for emergency notification of spill, fire, etc.

8.3. **Drums**: Common types of waste drums used for storing and shipping hazardous wastes are polyethylene, steel-polyethylene lined, and steel. Sizes are typically 5gal, 15gal, 30gal, and 55gal. Drums used for liquids typically are closed top with an opening to pour the solvent through a funnel, while drums used for solids or lab packs are open-top.

8.4. **Emergency Drench Shower**: Shower should deliver water approximately twenty gallons per minute with a non-interruptible flow. It may be turned on by pulling the shower handle down. It may be turned off by pushing the handle back to the 'off' position.

8.5. **Emergency Lighting** (as needed): The waste room is outfitted with emergency lighting that goes on if power fails.

8.6. **Exit Signs** (as needed): Exit signs are provided on all waste room doors. These signs are self-illuminating.

8.7. **Fire Alarm Pull Station**: A fire alarm pull station must be in close proximity to the hazardous waste room. The alarm may be activated by pulling the switch. Other alarm systems may be utilized as long as all personnel are trained on the procedures.

8.8. **Fire Extinguisher**: An extinguisher with a rating appropriate to the waste being stored in the area must be in close proximity to the hazardous waste room.

8.9. **Labels**: A multitude of labels are provided to ensure compliant labeling. They may be purchased or prepared manually.

8.10. **Liquid Chemical Neutralizers**: Liquid chemical neutralizers (base and acid) may be used to neutralize a contained hazardous liquid. This may be done by slowly adding the neutralizer to the liquid.

8.11. **Spill Control Pads**: Spill pads are used to soak up hazardous liquids. They do not neutralize spills. They are especially effective for cleaning up oily materials. Various pads are available for aqueous and petroleum based liquids.

8.12. **Spill Control Pillows**: Spill pillows may be used to soak up large amounts of liquid chemical spills. No neutralization occurs.

8.13. **Spill Dikes**: vary depending on the size and type of room: Their purpose is to encircle a spill, barring the spread of a hazardous chemical. They will also absorb liquids, but do not neutralize spills.

9. Reagents and Standards

9.1. Not applicable to this SOP.

10. Calibration

10.1. Not applicable to this SOP.

11. Procedure

11.1. All Pace facilities that generate hazardous waste must have a Generator's US EPA Identification Number. The ID number is obtained through the applicable EPA region's office by completing EPA form 8700-12, and must be completed before generating any hazardous waste.

11.1.1. Pace only utilizes transporters and treatment, storage, or disposal facilities (TSDFs) that have EPA identification numbers for hazardous waste handling and meet the TSDF transfer requirements.

11.1.2. A new ID number is necessary when changing locations as the number is tied to the facility address.

11.1.3. This facility's US EPA Identification Number is NCD986205086.

11.2. The laboratory generates wastes originating from several source types: materials and chemicals used to prepare and analyze samples (e.g., solvents, acids), unconsumed liquid and solid samples, certain types of batteries, mercury from lamps and broken thermometers and automobile waste. Unconsumed samples may include laboratory-contaminated sample residue (both liquid and soil) generated as part of digestion, extraction, etc., procedures used to prepare samples for analysis.

11.2.1. This facility is classified as a Small Quantity Generator.

11.3. Hazardous waste classification is the most critical step in establishing an effective, compliant waste-handling program. Laboratory wastes are classified using the criteria set forth under RCRA for ascertaining non-hazardous versus hazardous status, and this criterion is listed in the definition of hazardous waste in 6.19.

11.4. The following are the waste streams resulting from materials and chemicals used in the laboratory operation. Applicable information for each is given pertaining to packing, labeling, or listing on a manifest. A description of how the wastes are created, and the preferred method of final disposal for each, is included. The overriding principle in hazardous waste classification is application of a conservative formula based on all known or suspected hazards related to a waste material. While this formula may result in some materials being disposed as hazardous when in fact, they are non-hazardous (i.e., false positive), the formula will not be compromised in the interest of reducing the amount of waste produced. This will minimize any risk of a material being disposed of erroneously as non-hazardous when it, by definition, is a hazardous waste.

11.4.1. **Corrosive waste** is generated in the majority of the departments in the laboratory. This waste stream consists primarily of spent or excess aqueous reagent solutions generated from preservatives or other corrosive solutions generated in the course of analysis. The predominant corrosives include hydrochloric acid, nitric acid and sulfuric acid, but corrosives also include bases. Varying concentrations of metals may be present dependent upon the composition of the reagents added. This waste stream only has the hazardous quality of being corrosive; therefore, if a waste has any additional hazardous waste quality (i.e. Toxic or Ignitable) it cannot be mixed with this stream. This stream is treated onsite.

Corrosive Waste	
DOT Shipping Name	RQ Waste, Corrosive Liquid, N.O.S (i.e. corrosive material)
EPA Waste #	D002
Container	Glass sample containers
Average pH	<2.0, >12.5
Disposal Method	Treatment by Neutralization
Label	Corrosive

11.4.2. The **Chlorinated Waste Stream** consists primarily of methylene chloride with a very small amount of other organic solvents derived from extraction procedures performed on samples and from rinsing glassware. As a best practice, effort is made to have this waste stream as pure as possible in order to offer for recycling.

Chlorinated Solvents	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S (i.e. dichloromethane, acetone, methanol)
EPA Hazard Codes	F001

Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Chlorinated

11.4.3. The **Flammable Solvent Waste Stream** consists primarily of hexane, acetone, methanol, and used pump oil derived from extraction procedures performed on samples, rinsing glassware, and performing instrumentation maintenance. This waste stream must be strictly segregated from the chlorinated waste stream.

Flammable Solvent Waste	
DOT Shipping Name	RQ Hazardous Waste, Toxic Liquid, N.O.S. (i.e. acetone, methanol)
EPA Waste #	D001, F003
Container	55 Gallon Drum
Average pH	7.0
Disposal Method	Disposal by waste disposal firm
Label	Toxic, Flammable

11.4.4. **Universal Waste Stream** includes mercury containing fluorescent light bulbs and used batteries and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Universal Waste Stream	
DOT Shipping Name	Universal Waste
EPA Waste #	Lab Pack
Container	Lab Pack
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Universal Waste

11.4.5. **Hazardous Soil Waste Stream** includes unused samples with methanol and sodium bisulfate preservation and is accumulated from the daily operations of the laboratory. This waste stream is disposed of with lab pack by a waste disposal firm.

Hazardous Soil Waste Stream	
DOT Shipping Name	Hazardous Solid (methanol)
EPA Waste #	F003
Container	55 Gallon Drum
Average pH	Not applicable
Disposal Method	Disposal by waste disposal firm
Label	Flammable

11.5. Some waste can become complicated when attempting to classify as non-hazardous or hazardous due to the list of hazardous constituents contained in sections 261.30, 261.31, 261.32, and 261.33 of 40 CFR including a majority of analytes of interest routinely analyzed in Pace laboratories. Definitions have been established for each of the F, K. P, and U lists covering hazardous waste originating from non-specific sources, specific sources and discarded commercial chemical products, off-specification species, container residues, and spill residues. The application of listed hazardous

wastes and substances is intended for manufacturing processes involving pure products, by-products, wastes generated as part of the production process and cleanup of materials contaminated from a spill of the listed commercial chemical product or manufacturing chemical intermediate. See Attachment I for common F-listed wastes.

11.5.1. Hazardous waste classification of unconsumed samples by listed hazardous waste criteria is not commonly applied in laboratory operations. Examples of sample types which would be identified as listed hazardous wastes include the following:

11.5.1.1. Samples containing 5% or more (by volume) of halogenated and non-halogenated "spent solvents:" (e.g., drum sample with > 10% TCE).

11.5.1.2. Pure product and two phase solution samples containing a listed chemical product or manufacturing intermediate (e.g., drum sample)

11.5.1.3. Samples from specific sources listed in section 261.32 (e.g., bottom sediment sludge from the treatment of wastewaters from wood-preserving processes that use creosote and/or pentachlorophenol - K001).

11.5.1.4. Samples representing any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having a generic name listed in section 261.33, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in section 261.33.

11.5.2. For the wastes listed in 11.5.1.1 and 11.5.1.2, disposal can be achieved by individually lab packing them with other compatible hazardous wastes.

11.5.3. The remaining two sample types in 11.5.1.3 and 11.5.1.4 would also require lab packing for disposal. However, it is important to note that in order for the laboratory to ascertain that the samples were derived from a specific listed source or from a spill of a listed chemical, they must be so informed by the industrial concern or lead agency (e.g., EPA, state regulators) submitting the sample for analysis. If a water or soil sample contains a listed hazardous waste substance whose origin is unknown or uncertain to the lead agency, then that sample is not classified as a listed hazardous waste. Rather in this case, determination of a hazardous waste classification can only be obtained by the waste exhibiting a characteristic of hazardous waste (i.e., ignitability, corrosivity, reactivity, EP toxicity).

11.5.4. Due to the fact that the majority of samples analyzed by Pace do not meet the well-defined criteria for identifying "listed" hazardous waste, disposal classification of unconsumed samples will be based upon characteristics of hazardous waste.

11.5.4.1. Non-Hazardous - Analysis results indicate an absence of contaminants; unless contaminants listed under the hazardous disposal categories are parts of the requested sample analysis.

11.5.4.2. Hazardous – Analysis results indicate presence of contaminants (Attachment II) or sample analysis requires hazardous materials and contaminants. Samples in this category are segregated from others and disposed of as hazardous according to laboratory procedures.

11.5.4.3. PCB Waste - Generated exclusively by samples contaminated with greater than trace levels of polychlorinated biphenyls ($\geq$ 50 ppm). Samples containing 50 ppm (total) or higher of PCBs must be segregated and disposed of as PCB waste.

11.5.4.4. Waste Oil/Paint - Samples which are predominantly of an oil matrix (e.g., highly viscous organic liquid) or paint (solvent and pigment blend) are segregated and disposed in a separate container. Though these samples are defined as nonhazardous, oil samples are a special case and never disposed as nonhazardous.

Note: Bottle caps and liners do not typically contain sample residuals and can be disposed of directly through the non-hazardous building refuse.

11.5.5. USDA Regulated Soil is a special case of sample, and is strictly controlled under APHIS quarantine regulations 7 CFR 330 because it can readily provide a pathway for a variety of dangerous organisms into the United States. The movement of soil into the United States from foreign sources is prohibited, and movement within the continental U.S. (see Attachment III) is restricted unless authorized by APHIS under specific conditions or safeguards. The importation of soil from foreign sources and/or the interstate movement is authorized by APHIS solely under strictly controlled circumstances described in a permit and/or compliance agreement.

11.5.5.1. Any laboratory that plans to receive soil from a regulated area shown in Attachment III must first apply and receive a Soil Permit from the USDA.

11.5.5.2. All samples when received must be clearly marked as "USDA Regulated Soil" or some such marking to distinguish them from soils that are not from infested areas.

11.5.5.3. Any laboratory that receives soil from a foreign source or those shown in Attachment III, must either incinerate or autoclave any unconsumed samples and all apparatus used to handle the soil, including weigh boats, gloves, wooden spatulas, etc.

11.5.5.4. Refer to SOP CHR-L-005, current revision, for additional handling procedures.

11.6. Consolidation of wastes from the laboratory proceeds via two distinct routes covering either laboratory-generated hazardous wastes or excess unconsumed samples.

11.6.1. Laboratory Accumulation and Satellite Waste Containers

11.6.1.1. Waste materials from routine lab procedures are collected in containers of appropriate construction, placed in convenient locations at the point of generation. Under RCRA guidelines, these are defined as satellite containers.

11.6.1.2. The amount of hazardous waste stored in the laboratory at the individual satellite areas cannot exceed 55 gallons (liquid) or 550 lbs (solid) per waste stream, for non-acute hazardous waste.

11.6.1.3. Satellite waste containers must be labeled in accordance with OSHA regulations, including:

11.6.1.3.1. Designation of the contents to be hazardous waste with the words "Hazardous Waste" clearly legible

11.6.1.3.2. The waste stream description (e.g., acid waste)

11.6.1.3.3. A reference to area generating the waste (e.g., metals prep)

11.6.1.3.4. A hazard label (e.g., corrosive)

11.6.1.4. The satellite containers must be maintained such that evolution of chemical vapors is precluded. This requires that the container be closed at all times, except when adding or emptying hazardous waste to and from the container.

11.6.1.5. The most critical point in the waste handling system is when a person (e.g., analyst, technician) places a waste material into a satellite container. Here, the characteristics or listing of the waste and the waste stream must both be known to match. For this reason, only

material from approved procedures should be placed in the compatible satellite containers. All materials from experimental procedures, unknown or out of the ordinary sources, or from spill cleanups must be characterized and described to the Hazardous Waste Coordinator, who determines the proper method of disposal.

11.6.1.6. Full satellite containers must be transferred to the proper accumulation drum within 3 calendar days. Lab collection containers must not be filled to the top of the opening. Space must be left to prevent splashing of hazardous material when containers are emptied and to allow for expansion and contraction within the drum during transport.

11.6.1.7. Satellite containers must have secondary containment made of material that could successfully contain the entire satellite container's contents.

11.6.2. Unconsumed Sample Disposal

11.6.2.1. Samples which cannot be returned to the client for disposal must first be characterized in order to be processed for disposal.

11.6.2.2. Sample characterization is initiated at the time of final report generation by the individual signing the report (e.g., project manager). Samples are characterized by one of three methods

11.6.2.2.1. Analytical results are evaluated against characterization criteria established for the sample waste stream. The samples which exhibit waste characteristics as previously outlined are segregated and denoted per laboratory/facility policies. The completed form is then forwarded to the Hazardous Waste Coordinator, who in turn uses the information to coordinate removal of unconsumed samples from active sample storage by the log-in staff. OR:

11.6.2.2.2. Samples are scanned out of EPIC Pro (LIMS) as RCRA nonhazardous to be disposed as the waste stream is normally handled unless the sample tested over RCRA limits, in which EPIC Pro (LIMS) will prompt the employee that the sample is scheduled for Hazardous disposal, and is segregated from the nonhazardous samples. OR:

11.6.2.2.3. Samples of a certain type are all "assumed" to be hazardous, and all are placed into an accumulation drum with all required RCRA labeling for that waste stream.

11.6.2.3. Weekly, a Disposal Report by Sample is generated in EPIC Pro to facilitate the identification of samples designated as hazardous based on sample analysis. A sample custodian will attach a "LAB PACK" label to all samples identified as hazardous. Upon removal from the sample storage cooler, any sample labeled "LAB PACK" will be placed in the hazardous waste disposal area. The "LAB PACK" designated samples will be placed in a labeled drum. All "LAB PACK" designated samples will be disposed of by an approved waste disposal firm.

11.7. Transferring Satellite Waste to the Waste Storage/Accumulation Area

11.7.1. All transfers of satellite waste to waste drums must be made by the Hazardous Waste Coordinator or designated, trained personnel. When a satellite waste container is full, the Hazardous Waste Coordinator, or designee must be notified. Regular disposal events may be scheduled to dispose satellite waste on a continuous basis.

11.7.2. Find the correct waste drum by referring to the Hazardous Waste placard and hazard label. Mixing solvents that are not compatible could result in a hazardous reaction.

11.7.3. Ensure there is enough capacity in the drum to hold all the content that will be dispensed.

11.7.4. Check to make sure there is a ground connection before opening a solvent waste drum.

11.7.5. Open and slowly pour the contents of the satellite container into the proper waste drum using an appropriate solvent resistant funnel.

11.7.6. Replace the cap on the bunghole and carefully screw the cap on but do not tighten the cap.

11.8. Unconsumed Soil Samples

11.8.1. Non-hazardous soil samples will be consolidated in a drum for removal and incineration.

11.8.2. USDA regulated soils will be disposed of as described in section 11.5.5.4.

11.8.3. Hazardous soil samples will be disposed of as described in section 11.6.2.3.

11.9. Elementary Neutralization

11.9.1. Dilute corrosive solutions (e.g. preserved metals samples) which do not exhibit any hazardous characteristics other than being corrosive, may be neutralized. Elementary neutralization is exempt from RCRA permitting requirements for on-site hazardous waste treatment. While exempt under RCRA guidelines, before utilizing this practice to reduce off-site treatment or disposal of wastes, local pretreatment and discharge standards must be met for publicly owned treatment works (POTW).

11.9.2. The discharges listed below are prohibited under the National Pretreatment Standards and Prohibited Discharge Standards:

11.9.2.1. Pollutants causing fire or explosion (waste with a flashpoint < 60°C)

11.9.2.2. Corrosive wastes with pH less than 2 or greater than 12.5

11.9.2.3. Solid or viscous pollutants that could potentially block the system

11.9.2.4. Oxygen-demanding pollutants

11.9.2.5. Wastes which generate toxic gases

11.9.3. Non-hazardous water samples can be neutralized and disposed of via the sewer. A neutralization tank is attached to the sink drains. Fill the sink half-way with tap water. Pour several samples into the sink until it is about ¾ full. Drain and flush with copious amounts of tap water. The neutralization tank must be checked monthly and the pH adjusted to a pH greater than 5. Any empty sample glass containers should be crushed and disposed of by an approved waste disposal firm.

11.10. Waste Storage Container Requirements

11.10.1. Drums in the hazardous waste storage area are labeled consistent with both DOT and EPA regulations concerning hazardous materials and wastes (see Attachment IV for example of label).

11.10.2. Labels must be easily visible and legible (i.e., a drum must not be labeled and then placed in such a way that the label cannot be seen).

11.10.3. The Accumulation Start Date must be recorded on the drum. The date should reflect the first time waste was added to the drum and not the date when the waste was generated in the laboratory.

11.10.3.1. Once a waste is removed from the point of generation to a hazardous waste staging area, the clock is started for storage time prior to disposal.

11.10.3.2. Drums must be picked up by TSDF for disposal before accumulation time exceeds RCRA requirement for lab's generator status (see table 2.3).

11.10.4. One hazard label should be placed on the drum's top and another adjacent to the accumulation label.

11.10.5. The hazardous waste staging room must be arranged in such a fashion to assure direct access pathways in the event of foreseeable emergency. A minimum aisle space of three feet must be maintained at all times. Hazardous waste drums are to be stored in a manner that facilitates easy access both for filling and in case of an emergency. Drums are never stored more than two deep.

11.10.6. All hazardous waste drums and containers must be securely closed when not in use. All volatile and flammable hazardous waste liquid containers must be securely grounded at all times. Drums containing these liquids should also be manipulated with non-sparking tools and fitted with a drum venting bung, to assure that excess pressure build-ups are safely released.

11.10.7. All liquid waste stream containers must be provided with secondary containment devices. Such containment devices must be made of materials compatible with each waste, and they must be free of leaks. The waste storage room may act as secondary containment as long as the room has been constructed to safely and effectively contain a hazardous waste spill.

11.10.7.1. Secondary containers must exceed the total volume of the largest container stored in each containment device for indoor storage.

11.10.8. Compatibility of wastes must be considered in arranging storage areas. For example, acid waste should never be stored adjacent to basic waste, particularly cyanide wastes. Further examples are outlined in 40CFR264, Appendix V.

11.10.9. The hazardous waste staging area is controlled so unauthorized personnel are not able to access the room or contents.

11.10.10. The maximum volume of acutely hazardous waste (e.g., P-listed wastes) that can be accumulated in the laboratory is one quart. The volumetric measurement of one quart is based upon container size in which the waste is stored and not the actual amount (volume) of waste present. An example of how this one quart limit can inadvertently be exceeded involves the disposal of a neat standard of 2,4-dinitrophenol into a one gallon bottle. While the neat standard itself may only constitute 1-2mL, the volume as defined under RCRA would be one gallon, thus the laboratory would be out of compliance.

11.11. Waste Documentation and Reporting

11.11.1. All drums containing hazardous waste are recorded in a logbook or database. The information contained in this log is useful when filling out EPA biennial reports and for retaining an accurate description of how much waste has been accumulated. The following information is entered into the logbook/database:

11.11.1.1. The drum number.

11.11.1.2. The date filling the drum was started.

11.11.1.3. The drum capacity (e.g., 55-gallon, etc.).

11.11.1.4. The manifest number associated with the drum's disposal.

11.11.2. The following hazardous waste records must be maintained a minimum of five years and should be retained indefinitely:

11.11.2.1. Drum tracking logs.

11.11.2.2. Sample Reports.

11.11.2.3. Sample disposal information and waste records on computer disc.

11.11.2.4. Analytical records relating to sample waste stream profiling and characterization.

11.11.2.5. Labpack inventory logs.

11.11.2.6. Biennial Reports, Exception Reports, or other reports filed for compliance reasons.

11.11.2.7. Records related to unresolved enforcement action must be retained indefinitely until such a time that the matter is resolved.

11.11.2.8. Facility Certificates of Destruction or Recycling

11.11.3. A Waste Manifest is the documentation form that must accompany all shipments of hazardous waste while in transit.

11.11.3.1. The manifest is be signed and dated by a DOT trained Pace employee responsible for the shipment and the transporter. The transporter will leave one of these "two-signature page" copies of the manifest.

11.11.3.2. Within 35 days you will receive a three-signature page (generator, transporter, facility) showing the waste reached its intended destination. The waste coordinator is responsible to ensure it is filed in the Waste Manifests folder.

11.11.3.2.1. If you do not receive the three signature page within 35 days of shipment, call the facility to find out why you have not received it. If you do not receive the three-signature page within 60 days you must file an exception report with NC DENR Hazardous Waste Section.

11.11.3.3.. All manifests must be kept for a minimum of three years.

11.11.4. The central accumulation staging room must have a documented inspection weekly and satellite waste containers must have documented inspection as part of the monthly laboratory inspection. The inspections should ensure all regulations are obeyed; see 11.10 and 11.6.1 for accumulation storage and satellite rules, respectively.

11.11.4.1. A record of the inspections must be kept in an inspection log or summary.

11.11.4.2. Records must be maintained for at least three years from the date of inspection. At a minimum, the records must indicate:

11.11.4.2.1. The date and time of the inspection

11.11.4.2.2. The name and signature of the inspector (typically will be Hazardous Waste Coordinator)

11.11.4.2.3. A notation of the observations made (can be in a check-off format, e.g., fire extinguisher: charged _X_ requires recharging __)

11.11.4.2.4. The date and nature of any repairs or other remedial actions.

11.11.5. Annual Generation Reports are required to be filed with Agency that requires Annual Report:

11.11.5.1. Large Quantity Generators must file a biennial report with the local state or EPA Region.

12. Quality Control

12.1. Not applicable to this SOP.

13. Method Performance

13.1. Not applicable to this SOP.

14. Pollution Prevention and Waste Management

14.1 Not applicable to this SOP.

15. References

15.1. 40CFR261-268, Code of Federal Regulations Chapter 1, Subchapter I – Solid Waste.

15.2. 29CFR171-174, Code of Federal Regulations, Transportation.

15.3. Federal Plant Pest Regulations, Part 330.

15.4. Understanding the Hazardous Waste Rules, A Handbook for Small Business, 1996 Update, www.epa.gov/docs.

16. Tables, Diagrams, Flowcharts, Attachments, Appendices, etc.

16.1. Attachment I: Hazard Codes for Common F-List Wastes (solvents).

16.2. Attachment II: TCLP Contaminant List with Concentration Limits.

16.3. Attachment III: Soil Movement Regulations (Map).

16.4. Attachment IV: Hazardous Waste Label for Accumulation Drum (example).

16.5. Attachment V: Satellite Container Inspection Form

16.6. Attachment VI: Waste Accumulation Room Inspection Form

17. Revisions

Document Number	Reason for Change	Date
ALL-S-002-rev.0	First Issue	17Mar2005
	General: converted old SOP and EMM into an SOP Template (SOT). Removed MN address from header. Sections 1, 2.1, 3: reworded. Removed old section 2.3. Inserted new Table 2.4- RCRA Requirements for labs. Section 6: added definitions for DTSC and Universal Waste. Moved old Table 2 to Attachment II and changed reference in section 6.19.2.4. Removed old section 7 (Responsibilities). Section 8.1: removed sentence regarding SOP addenda. Section 8.4: reworded drum section to be more general. Added new section 11.1 (from old section 2.3). Added section 11.1.3: number entry is in editable red text. Added section 11.2.1: size of generator is in editable red text. Sections 11.4.1 thru 11.4.4: added these sections in red editable text so labs can enter information about their facility's waste streams. Section 11.5: added reference to Attachment I. Section 11.6.2.3: added in red text so labs can enter their method for sample disposal. Sections 11.7.1 and 11.10.7; reworded for clarity. Section 11.8: added in red text so labs can enter their method of segregating soils for USDA permit.	
SOT-ALL-S-002-rev.01	Section 11.9.3: added in red text so labs can enter their neutralization procedures. Added sections 11.11.2.6 – 11.11.2.8. Section 11.11.3: added red text so labs can enter procedure for maintaining waste documentation. Removed old section 11.11.5 (repeat information). Added new label in Attachment IV. Added new Attachments V and VI.	14Oct2009
SOT-ALL-S-002-rev.02	Removed old section 8.11- Over Pack Drums. Section 15.4: Added DoD reference.	04May2011
S-CHR-S-002-rev.02	Updated red text with local procedures	23July2011

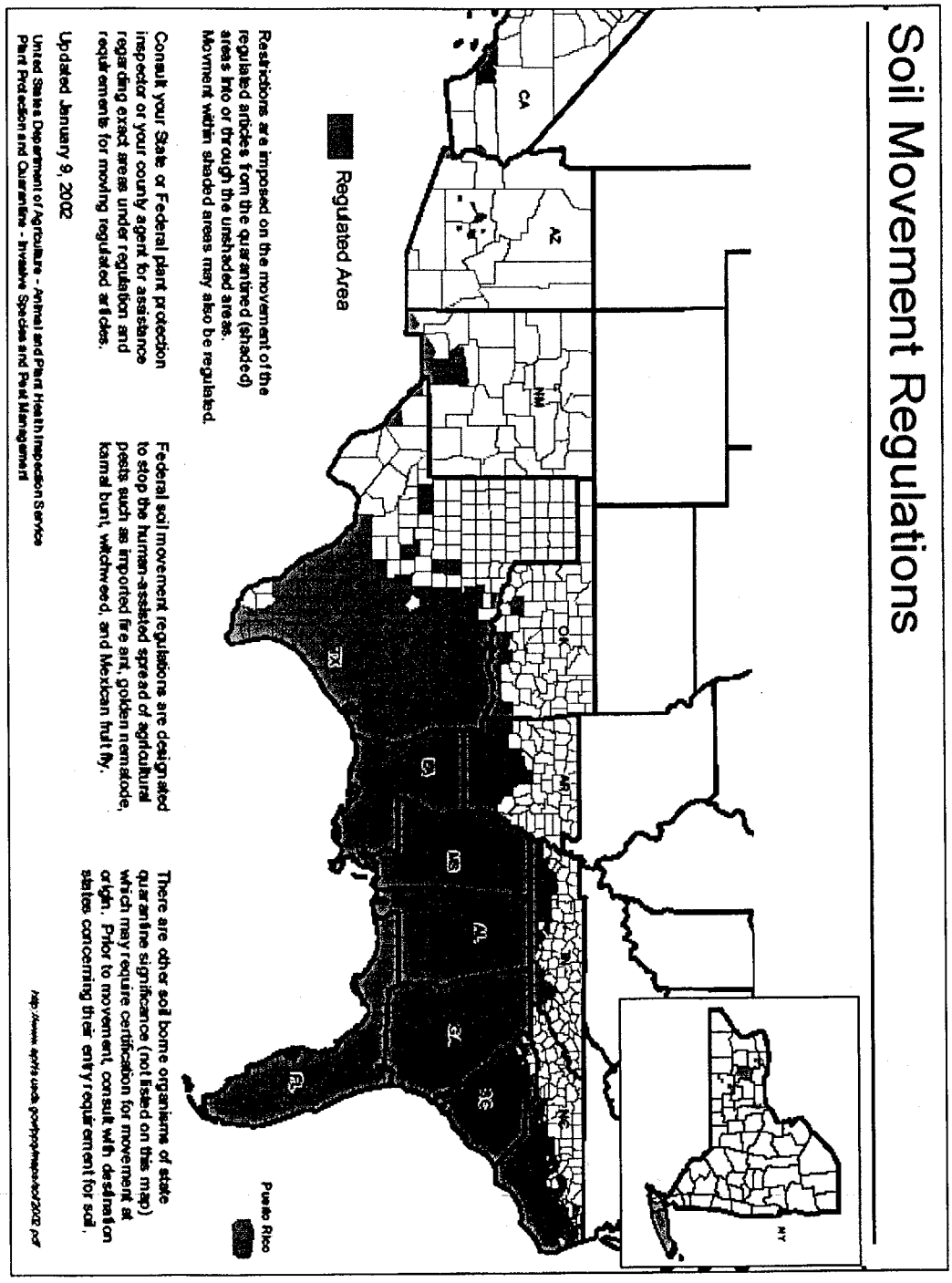
Attachment I: Common F-Listed Solvents

Waste Name	Hazardous Waste Code(s)	Waste Name	Hazardous Waste Code(s)
Acetone	F003	Methylene Chloride	F001, F002
Benzene	F005	Methyl ethyl ketone (MEK)	F005
iso-Butanol	F005	Methyl isobutyl ketone	F003
n-Butyl alcohol	F003	Nitrobenzene	F004
Carbon Disulfide	F005	2-Nitropropane	F005
Carbon Tetrachloride	F001	Orthodichlorobenzene	F002
Chlorobenzene	F002	Pyridine	F005
Chlorinated fluorocarbons (CFC)s	F001	Tetrachloroethylene	F001, F002
Cresols	F004	Toluene	F005
Cresylic acid	F004	1,1,1-Trichloroethane	F001, F002
Cyclohexanone	F003	1,1,2-Trichloeoethane	F002
2-Ethoxyethanol	F005	1,1,2-Trichloro-1,2,2-trifluoroethane	F002
Ethyl acetate	F003	Trichloroethylene	F001, F002
Ethyl benzene	F003	Trichloroflourormethane	F002
Ethyl ether	F003	Xylene	F003
Methanol	F003		

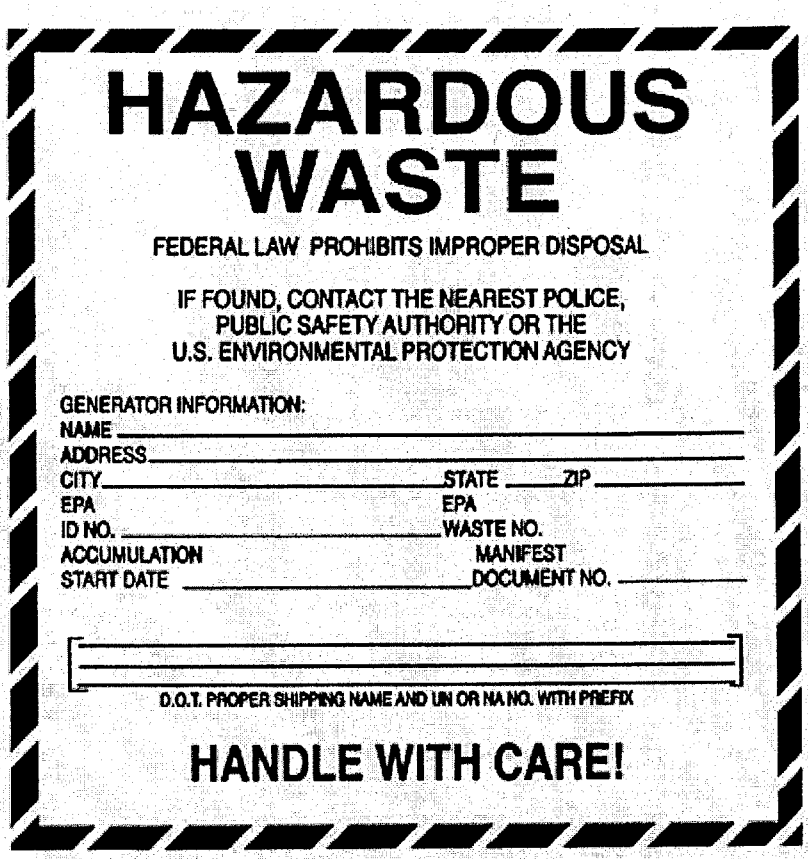
Attachment II: TCLP Contaminant List

Waste ID #	Contaminant	Conc (mg/L)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin	0.02
D013	Lindane	0.4
D014	Methoxychlor	10.0
D015	Toxaphene	0.5
D016	2,4-D	10.0
D017	2,4,5-TP Silvex	1.0
D018	Benzene	0.5
D019	Carbon Tetrachloride	0.5
D020	Chlordane	0.03
D021	Chlorobenzene	100.0
D022	Chloroform	6.0
D023	o-Cresol	200.0
D024	m-Cresol	200.0
D025	p-Cresol	200.0
D026	Cresol	200.0
D027	1,4-Dichlorobenzene	7.5
D028	1,2-Dichloroethane	0.5
D029	1,1-Dichloroethylene	0.7
D030	2,4-Dinitrotoluene	0.13
D031	Heptachlor	0.008
D032	Hexachlorobenzene	0.13
D033	Hexachlorobutadiene	0.5
D034	Hexachloroethane	3.0
D035	Methyl ethyl ketone	200.0
D036	Nitrobenzene	2.0
D037	Pentachlorophenol	100.0
D038	Pyridine	5.0
D039	Tetrachloroethylene	0.7
D040	Trichlorethylene	0.5
D041	2,4,5-Trichlorophenol	400.0
D042	2,4,6-Trichlorophenol	2.0
D043	Vinyl Chloride	0.2

Attachment III: USDA Soil Movement Regulation Map



Attachment IV: Hazardous Waste Label for Accumulation Drum (Example)



Attachment V: Satellite Container Inspection Form

Waste Container ID	Properly Labeled	Label Legible	Secondary Containment	Closed when not in use	Inspection Date
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	
	Yes / No	Yes / No	Yes / No	Yes / No	

If any of the above fields are a "NO", please document how the deviance was brought back into compliance.

Comments: _____

_____

_____

Signature of Inspector: _____

Reviewed by: _____

Review Date: _____

ATTACHMENT VI: WASTE ACCUMULATION ROOM INSPECTION FORM

Containers closed when not in use	Labels Easily Seen and Legible	Drums have Accumulation Start Date	Storage Amounts and Limits Obeyed[1]	Secondary Containment	Adequate Aisle Space	Available Emergency Equip. and Materials	Signature and Date of Inspection	Corrective Action for NO Answers
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
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Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		
Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No	Yes / No		

1: Accumulation limits are 90 days for LQG, and 180 days for SQG. SQG may have no more than 6000kg waste at any time.

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

1162922

Section A **Required** Client Information:	Section B **Required** Project Information:	Section C Invoice Information:
Company:	Report To:	Attention:
Address:	Copy To:	Company Name:
		Address:
Email To:	Purchase Order No.:	Pace Quote Reference:
Phone: Fax:	Project Name:	Pace Project Manager:
Requested Due Date/TAT:	Project Number:	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location

STATE: _____

Requested Analysis Filtered (Y/N)

ITEM #	Section D **Required** Client Information **SAMPLE ID** (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Analysis Test ↓ Y/N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																					
2																					
3	Example																				
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS

ORIGINAL

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY):				

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

FEB 2 9 2012

Re: Tier I Directive
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567; CA # 43229; MWA #UMW-24463
Release Reported April 14, 2011
Phase II Assessment received April 14, 2011
QAPP Contractor Addendum Revision #1 received February 22, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (SCDHEC) has reviewed the referenced Quality Assurance Project Plan (QAPP) Contractor Addendum submitted by Environmental Compliance Services on your behalf. The report indicates that chemicals of concern are present in the soil and groundwater at concentrations that exceed risk-based screening levels. To determine what risk the chemicals may pose to human health and the environment, and in accordance with Section 280.65 of the South Carolina Underground Storage Tank Control Regulations, implementation of a Tier I assessment as outlined in the UST Quality Assurance Program Plan (QAPP) is necessary. The Tier I assessment should be conducted in accordance with the UST Management Division QAPP and must be conducted in compliance with all applicable regulations and the submitted site specific QAPP Contractor Addendum. A copy of SCDHEC QAPP for the UST Management Division is available at http://www.scdhec.gov/environment/lwm/html/ust.htm. All shallow wells are to be installed with screen intervals that bracket the water table. Groundwater samples will include duplicate samples, field and trip blanks.

According to Division records, the release at the facility was reported to SCDHEC on April 14, 2011. In accordance with Section 44-2-40(D) of the SUPERB Act, you are responsible for the first $25,000 of site rehabilitation costs. To insure that expenditures made toward rehabilitation apply to the $25,000 deductible, the Division has pre-approved costs for implementing the Tier I and assigned a cost agreement number for tracking. By law, the SUPERB Account cannot compensate any costs that are not pre-approved.

The Division has pre-approved a total of $10,230 for implementation of the Tier I assessment plus $270.00 for collection and laboratory analyses of two surface water samples. The total includes costs for completion of up to 75 feet of permanent monitoring well footage. A groundwater sample should be collected for all water supply wells within 500 feet of the facility and analyzed for BTEX, naphthalene, 8 oxygenates, 1,2 DCA, ethanol, and EDB. Additional monitoring well footage can be billed at the SUPERB allowable rate of $38 per foot as well as collection and laboratory analyses of groundwater from water supply wells provided that the cost is pre-approved by the Division. Upon receipt of a report of findings and a completed Tier I invoice with all necessary supporting documentation, up to $10,500 will be applied towards the $25,000 deductible. **The report, contractor checklist, and invoice should be submitted to the Division within sixty (60) days of the date of this correspondence.**

Please note that in accordance with R.61-92, Subpart H, Section 280.114, you are required to notify the Division by certified mail within ten (10) days of commencing a voluntary or involuntary proceeding in bankruptcy. State law also requires that an owner/operator or guarantor that files for bankruptcy protection must immediately submit appropriate forms documenting that entity's ability to demonstrate financial responsibility.

Implementation of the Tier I may proceed immediately upon receipt of this correspondence. Approval to install three permanent monitoring wells and for the site specific QAPP contractor addendum is enclosed. A copy has been provided to your site rehabilitation contractor. Please note that applicable South Carolina certification requirements regarding laboratory services, well installation, and report preparation must be satisfied. Also note that only EPA Method 8260B will be accepted for analysis of volatile organic hydrocarbons. Any site rehabilitation activity associated with the UST release must be performed by an SCDHEC-certified site rehabilitation contractor as required by R.61-98.

The Department grants pre-approval for transportation of virgin petroleum impacted soil and groundwater from the referenced site to a permitted treatment facility. There can be no spillage or leakage in transport. All investigation-derived waste (IDW) must be properly contained and labeled prior to disposal. IDW should not be stored on-site longer than ninety (90) days. A copy of the disposal manifest and/or acceptance letter from the receiving facility that clearly designates the quantity received must be included as an appendix to the report. If the COC concentrations based on laboratory analysis is below Risk Based Screening Levels (RBSLs), please contact the project manager for approval to dispose of soil and/or groundwater on site. The SUPERB Account will not reimburse for transportation or treatment of soil and/or groundwater with concentrations below RBSLs.

On all correspondence regarding this site, please reference UST permit number 02567. Should you have any questions regarding this correspondence, please feel free to contact me at (803) 896-6669. I can also be reached by email at shradeaa@dhec.sc.gov or by fax at (803) 896-6245.

Sincerely,

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Enc: Approved Cost Agreement
Monitoring Well Approval
Signed Site Specific QAPP Contractor Addendum

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708 (with enc.)
Technical file (with enc.)

D H E C

PROMOTE PROTECT PROSPER

C. Earl Hunter, Commissioner

Promoting and protecting the health of the public and the environment.

Monitoring Well Approval

Approval is hereby granted to:	Environmental Compliance Services, Incorporated
(on behalf of):	Rhodes Oil Company
Facility:	Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit Number:	02567
County:	Colleton

This approval is for the installation of three groundwater monitoring wells. The monitoring wells are to be installed in the approved locations. The monitoring wells are to be installed following the South Carolina Well Standards, R.61-71, and the applicable guidance documents.

Please note that R.61-71 requires the following:

1. All wells shall be drilled, constructed, and abandoned by a South Carolina certified well driller per R.61-71.D.1.

2. All monitoring wells shall be labeled as required by R.61-71.H.2.c.

3. A Water Well Record Form or other form provided or approved by the Department shall be completed and submitted to the Department within 30 days after well completion or abandonment unless another schedule has been approved by the Department. The form should contain the "as-built" construction details and all other information required by R.61-71.H.1.f

4. All analytical data and water levels obtained from each monitoring well shall be submitted to the Department within 30 days of receipt of laboratory results unless another schedule has been approved by the Department as required by R.61-71.H.1.d.

5. If any of the information provided to the Department changes, notification to Arthur Shrader (tel: 803-896-6669 or e-mail: shradeaa@dhec.sc.gov) shall be provided a minimum of twenty-four (24) hours prior to well construction as required by R.61-71.H.1.a.

6. All temporary monitoring wells shall be abandoned within 5 days of borehole completion using appropriate methods as required by R.61-71.H.4.c. All other wells shall be properly developed per R.61-71.H.2.d.

7. Departmental approval is required prior to abandonment of all monitoring wells as required by R.61-71.H.1.a.

This approval is pursuant to the provisions of Section 44-55-40 of the 1976 South Carolina Code of Laws and R.61-71 of the South Carolina Well Standards and Regulations, dated April 26, 2002. A copy of this approval should be on the site during well installation.

Date of Issuance: **February 23, 2012** **Approval #:** **UMW-24463**

Arthur Shrader, Hydrogeologist
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

Section A: Project Management

A1 Title and Approval Page

Quality Assurance Project Plan
Addendum to the SC DHEC UST Programmatic QAPP
For
Rhodesway North; UST Permit #02567

1400 Jefferies Highway, Walterboro, SC

Prepared by:
Micheal Clea
Environmental Compliance Services, Inc.
13504 South Point Blvd, Ste F
Charlotte, NC 28273

Date: February 14, 2012
Certified UST Site Rehabilitation Contractor #358
Environmental Compliance Services, Inc.

Approvals:

Art Shrader
SC DHEC Project Manager
Signature Date 2/23/12

Micheal Clea
Contractor Project Manager
Signature Date 2/16/12

Kurt Blevins
Site Rehabilitation Contractor
Signature Date 2/16/2012

Craig L. Kennedy, PG
Project Verifier/QA Manager
Signature Date 2/17/2012

for Jeff Graham
Laboratory Director
Signature Date 2/16/2012

Larry Lewis
AES Laboratory Director
Signature Date

Joshua Slusarczyk
Shield Engineering Lab Director
Signature Date 2-16-12

Approved Cost Agreement 43229

Facility: 02567 RHODESWAY NORTH
SHRADEAA
PO Number:

Task / Description	Categories	Item	Description	Qty / Pct	Unit Price	Amount
10 SAMPLE COLLECTION						
		D	GROUNDWATER NO-PURGE	2.0000	35.00	70.00
11 ANALYSES						
	GW GROUNDWATER	A1	BTEXNM+OXYGS+1,2-DCA+ETH-8260B	2.0000	100.00	200.00
20 TIER I						
			TIER I	1.0000	10,230.00	10,230.00
				Total Amount		10,500.00

D H E C

PROMOTE PROTECT PROSPER

Catherine B. Templeton, Director

Promoting and protecting the health of the public and the environment

CERTIFIED MAIL
91 7199 9991 7031 3717 6548

MAY 3 1 2012

MR ROBERT SMITH
RHODES OIL COMPANY
PO BOX 1545
WALTERBORO SC 29488-1545

Re: Notice of Alleged Violation
Rhodesway North, 1400 Jefferies Highway, Walterboro, SC
UST Permit #02567; CA # 43229; MWA #UMW-24463
Release Reported April 14, 2011
Phase II Assessment received April 14, 2011
QAPP Contractor Addendum Revision #1 received February 22, 2012
Tier I Directive dated February 29, 2012
Colleton County

Dear Mr. Smith:

The Underground Storage Tank (UST) Management Division of the South Carolina Department of Health and Environmental Control (Agency) directed you in February 2012 to complete a Tier I assessment by April 30, 2012. To date the required report has not been received. In accordance with Section 280.65 of the South Carolina Underground Storage Tank Regulations, the assessment must be conducted as chemicals of concern are above the risk-based-screening levels.

Implementation of this scope of work should proceed upon receipt of this correspondence. **Please submit the report on or before July 5, 2012. Should you not submit the Tier I Report on or before these dates, this office will initiate further enforcement action.**

On all correspondence regarding this site, please reference UST Permit # 02567. If you have any questions concerning this correspondence, please call me at (803) 896-6669.

Sincerely,

Arthur Shrader, Project Manager
Assessment Section
Underground Storage Tank Management Division
Bureau of Land and Waste Management

enc: UST Division Tier I Directive dated February 29, 2012

cc: Environmental Compliance Services, Inc. PO Box 3528, Fort Mill, SC 29708 (with enc.)
ECS Contractor Certification File (with enc.)
Technical File (without enclosure)

WHERE BUSINESS AND THE ENVIRONMENT CONVERGE

TIER I ASSESSMENT

RHODESWAY NORTH
UST PERMIT 02567
WALTERBORO, SOUTH CAROLINA

Prepared for:
Rhodes Oil Company, Inc.
PO Box 1545
Walterboro, SC 29488-1545

Project No. 14-215778.01
July 5, 2012

Prepared by:
ECS
PO Box 3528
Fort Mill, SC 29708-3528
tel 704.583.2711 fax 704.583.2744
www.ecsconsult.com

TIER I ASSESSMENT REPORT
RHODESWAY NORTH
1400 JEFFERIES HIGHWAY
WALTERBORO, COLLETON COUNTY
UST PERMIT NO. 02567
ECS PROJECT NO. 14-215778

Prepared For:

Rhodes Oil Company Inc.
PO Box 1545
Walterboro, South Carolina 29488-1545

Prepared By:

Environmental Compliance Services, Inc.
Post Office Box 3528
Fort Mill, South Carolina 29708

July 5, 2012

Micheal Clea, MBA
Project Manager

CRAIG L. KENNEDY REGISTERED No. 2425 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

Craig L. Kennedy, P.G.
SC Registration No. 2425

TIER I ASSESSMENT REPORT OF FINDINGS

I. INTRODUCTION

A. Owner/Operator Information
Name: Rhodes Oil Company Inc.
Address: PO Box 1545 Walterboro, South Carolina 29488-1545
Telephone Number: 843-549-5521

B. Property Owner Information
Name: Rhodes Oil Company Inc.
Address: PO Box 1545 Walterboro, South Carolina 29488-1545
Telephone Number: 843-549-5521

C. Contractor Information
Name: Environmental Compliance Services, Inc.
Address: P.O. Box 3528, Fort Mill, SC 29708
Telephone Number: (800) 627-0493
Certification Number: 358

D. Site Information (UST No. 02567)
Name: Rhodesway North
Address: 1400 Jefferies Highway, Walterboro, South Carolina 29488

Description of Adjacent Land Use: Commercial
Predicted Future Land Use: Commercial

Site History
Date Release Reported to SCDHEC: April 14, 2011
Estimated Quantity of Product Released: Unknown
Cause of Release: Unknown

Other releases at this site? Yes (No)
If yes, date release reported to SCDHEC:
Status of release:
No further action date:

UST #	Size	Product	Date Installed	Currently in Use	Date Closed
1	12,000	Diesel Premium	Unknown	Yes	Not applicable
2	12,000	Diesel	Unknown	Yes	Not applicable
3	12,000	Regular Unleaded Gasoline	Unknown	Yes	Not applicable
4	12,000	Unleaded Plus Gasoline	Unknown	Yes	Not applicable
5	12,000	Premium Unleaded Gasoline	Unknown	Yes	Not applicable

II. SITE CHARACTERISTICS

A. Site Geography

The site is located at the intersection of N. Jefferies Highway (US Highway 15) and Robertson Blvd in the city of Walterboro, SC. The area surrounding the site was primarily developed with commercial properties. The surrounding properties include Walker Accounting & Tax Services to the north; Dollar General to the east; Walgreen's to the south across Robertson Boulevard; South Carolina Bank & Trust across the intersection; and, CVS to the west across N. Jefferies Hwy. The topography of the area around the site was generally characterized by gently rolling features.

Mean Elevation of Site: Approximately 79 feet above National Geodetic Vertical Datum (NGVD).

Additional Comments: N/A

B. Exposure Analysis

Describe all potential receptors and preferred pathways within a 1,000-foot radius of the site.

Description of Receptor	Distance/Direction from Site
Mapped Wetlands	Within 275 ft of the site to the North East
Tributary to Ireland Creek	Within 300 ft of the site to the North East

Additional Comments:

C. Utilities Survey

List the utilities on-site, and adjacent to the site within a 250-foot radius, that could serve as exposure points or ingestion pathways.

Utility	On-site or Distance/Direction from Site	Depth to Utility
Water Line	On-site, northwest corner of property	Less than 5 feet
Fiber Optic Line	On-site, northwest portion of property	Less than 5 feet
Sewer Lines	On-site, northwest portion of property	Overhead
Overhead Electrical Line	On-site, northern, southern and western portions of the property	Overhead

Additional Comments: N/A

D. Site Geology

Provide a brief description of the regional geology and hydrogeology.

The site is located in the Coastal Plain region of South Carolina. According to Newcombe (1989), near surface sediments consist of Pliocene- to Holocene-age undifferentiated sand, silt and clay of alluvial origin, representing terrace deposits of relict shorelines. The study area lies within the floodplain of the Ashepoo, Combahee and Edisto Rivers. The depositional setting of the area has been termed “transitional” from the alluvial, upper deltaic plain to the northwest, to the proximal marine and marine environments to the southeast. In this portion of the Coastal

Plain, surficial sediments range in thickness from less than 50 to approximately 400 feet. Underlying the surficial sediments is the Cooper Formation, an equivalent to the upper portions of the Floridan Aquifer (Ocala Limestone), which is an important source of groundwater in the eastern Coastal Plain. The limestone overlies the Black Mingo Formation, a Paleocene-age limestone mixed with sub-equal portions of sand and clay. The Black Mingo Formation is also used for public water supply wells where it is found with the Floridan equivalents. Below the Black Mingo Formation are the Cretaceous aquifers. In the study area, these units are, in ascending order, the Cape Fear Formation, the Middendorf Formation and the Black Creek Formation. All three water-bearing units are semi-confined in the region, with the Black Creek Formation being the principal groundwater source for the study area. These Cretaceous units range in thickness from 500 feet to over 1,000 feet, and lie unconformably over pre-Cretaceous crystalline bedrock.

The Pliocene- to Holocene-age undifferentiated sands, silts and clays comprise the surficial aquifer in central Colleton County. These units are minor sources of water for agricultural and residential irrigation but generally do not supply potable water for domestic use. The Black Mingo and Cooper Formations, and to a lesser extent the Cretaceous aquifers, are the main sources of drinking water for the region. Recharge of the upper water-bearing unit, the Ocala Limestone, occurs from rainfall and surface runoff in areas where it outcrops. The lower Cretaceous units are recharged in their respective outcrop areas located to the northwest. In the study area, the base of freshwater has been estimated at 2,000 feet below sea level.

Provide a brief description of the site specific geology and stratigraphy.

The surface material at the site was primarily asphalt and smaller areas of concrete at the canopy and store building. The asphalt/concrete and gravel base material was approximately 1-foot in thickness. Native soils observed below the thin layer of fill material at the site were generally characterized as tan/brown/clayey sand and sandy clay to depths ranging between 5 feet and 10 feet below ground surface. Below the sandy clay, the site was underlain by sand to the termination depths of 12 to 14 feet bgs.

Based on the grain size and hydrometer analyses, the percentages of gravel, sand, silt, and clay in a soil sample collected from soil boring SB-4-4 at a depth of 4 feet were 0.3%, 79.8%, 7.6%, and 12.4%, respectively. The depths to groundwater in monitoring wells at the site ranged from 5.11 feet (MW-2) to 5.85 feet (MW-3).

E. Soil Boring Data

Drilling Date(s): April 16, 2012
Provide a brief justification for the location of the soil borings.

The deisel USTs were located on the southeast portion of the site, with four dispenser islands to the northeast of the USTs adjacent to the building (**Figure 2**).

SB-1– South side of diesel UST basin
SB-2 – North of diesel UST basin
SB-3 – Along product lines, north of diesel UST basin
SB-4/MW-1 – Along product lines, midway between diesel UST basin and dispensers
SB-5 – Along product lines, east of diesel dispensers
SB-6– Middle of the east dispenser islands

SB-7 – Middle of the west dispenser islands
SB-8/MW-2 – Background location located northeast of the store building
MW-3 - Side gradient well located on the west portion of the site.

UST Area Borings:

Borehole: SB-1 Sampling Date: 4/16/12
Sample Depth: 5 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Condition
0-5	1044	Tan/grey silty sand/ fine-medium	Dry
5-10	--	Grey/black silty sand/fine-medium	Wet

Borehole: SB-2 Sampling Date: 4/16/12
Sample Depth: 5 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
0-5	1158	Asphalt, /brown/grey sandy silt/clay	Dry
5-10	--	Brown/ grey silty clay	Wet

Piping and Dispenser Area Borings:

Borehole: SB-3 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	146	black/grey sandy clay	Dry
4	1398	tan/grey silty sand/fine-medium	Dry
6	--	Tan sandy claytan/grey/ silty sand/ fine-medium	wet

Borehole: SB-4/MW-1 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	186	Black/grey sandy clay	Dry
4	1492	Tan/ grey sandy/clay	Dry
6	--	Brown/black/silty sand/fine-medium	wet
8	--	Brown/black/silty sand/fine-medium	wet
10	--	Grey/silty sand/fine-medium	wet
15	--	Grey/silty sand/fine-medium	wet

Borehole: SB-5 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	186	Grey/tan silty clayey sand/fine-medium	Dry
4	1492	Grey/tan silty clayey sand/fine-medium	Dry
6	--	Grey/tan silty clayey sand/fine-medium	wet

Borehole: SB-6 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	327	Black/grey clayey sand/fine-medium	Dry
4	1091	Black/grey clayey sand/fine-medium	Dry
6	--	Black/grey clayey sand/fine-medium	wet

Borehole: SB-7 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	137	Black/grey clayey sand/fine-medium	Dry
4	1294	Black/grey clayey sand/fine-medium	Dry
6	--	Black/grey clayey sand/fine-medium	Wet

Background Boring:

Borehole: SB-8/MW-2 Sampling Date: 4/16/12
Sample Depth: 4 feet

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	36.0	Black clayey sand/fine-medium	Dry
4	40	Brown/black silty sand/fine-medium	wet
11	--	Grey/ silty sand/fine-medium	wet
13	--	Grey/ silty sand/fine-medium	wet

Borehole: MW-3 Sampling Date: 4/16/12
Sample Depth: N/A

Sampling Interval (feet)	Field Screening Results (ppm)	Lithology	Soil Conditions
2	--	Asphalt/fill, brown sandy clay	Dry
5	1.3	Black/Grey/ silty sand/fine-medium	Wet
10	1.1	Black/Grey/ silty sand/fine-medium	Wet
12	--	Tan/ silty sand/fine-medium	Wet
14	--	Tan/ silty sand/fine-medium	Wet

Soil Analytical Data[1] (mg/kg):

COC	RBSL[2] (sandy soil)	RBSL[3] (clay-rich soil; separation distance <10 ft)	SB-1 (5')	SB-2 (5')	SB-3 (4')	SB-4 (4')	SB-5 (4')	SB-6 (4')	SB-7 (4')	SB-8 (4')
Benzene	0.007	0.003	**1.13**	**4.00**	**0.285**	**2.91**	**0.0847 J**	**2.410 J**	**0.463 J**	NR
Toluene	1.450	0.627	**8.42**	**49.00**	0.786	**20.00**	0.408	**10.40**	**5.01**	NR
Ethylbenzene	1.150	1.551	**35.2**	**28.60**	0.264 J	**9.43**	0.137 J	**3.16**	**4.02**	NR
Total Xylenes	14.500	13.010	**24.38**	**156.40**	1.322 J	**51.60**	0.72	**17.07**	**24.02**	NR
MTBE	N/A	N/A	0.479 J	2.21	9.31	15.80	0.296	7.91	5.47	NR
Naphthalene	0.036	0.047	**36.7**	**19.60**	0.733	**13.10**	**0.311**	**2.290 J**	**14.60**	NR
Benzo(a) anthracene	0.066	0.066	<1.11	<1.17	<0.0114	<0.253	<0.0109	<0.0561	<0.227	NR
Benzo(b) fluoranthene	0.066	0.066	<1.11	<1.17	<0.0114	<0.253	<0.0109	<0.0561	<0.227	NR
Benzo(k) fluoranthene	0.066	0.066	<1.11	<1.17	<0.0114	<0.253	<0.0109	<0.0561	<0.227	NR
Chrysene	0.066	0.066	<1.11	<1.17	<0.0114	<0.253	<0.0109	<0.0561	<0.227	NR
Dibenzo(a,h) anthracene	0.066	0.066	<1.11	<1.17	<0.0114	<0.253	<0.0109	<0.0561	<0.227	NR
TPH DRO[7]	N/A	N/A	NR	NR	NR	800	NR	NR	NR	NR
TOC[8] (background boring)	N/A	N/A	NR	NR	NR	NR	NR	NR	NR	2,330

Notes:

1. Analyses for BTEX constituents and naphthalene by EPA Method 8260;analyses for PAHs by EPA Method 8270 with 3546 preparation; analysis for TPH DRO by Method 3550C/8015C; analysis for TOC by EPA Method 9060 Modified.
2. May 2001 Risk-Based Screening Levels for sandy soil.
3. May 2001 Risk-Based Screening Levels for clay-rich soil showing the worst case scenario where separation distance from the depth of the soil sample collected to the top of the water table is less than 10 feet.
4. Less than the laboratory reporting limit.
5. Analysis was not requested.
6. J value represents an estimated concentration detected above the method detection limit and below the reporting limit.
7. TPH DRO – Total Petroleum Hydrocarbons-Diesel Range Organics.
8. TOC – Total Organic Carbon.
9. Additional CoC detected include Anthracene, Fluoranthene, Fluorene, 1-Methylnaphthalene, 2-Methylnaphthalene, Phenanthrene, and Pyrene.

Discuss the horizontal and vertical extent of COC in soil.

Chemicals of concern (CoC) were reported to exceed the RBSLs in seven of the soil samples collected during the Tier I activities (SB-1 through SB -7). Samples were collected at depths ranging from 4 to 6 feet. Based on the wide spread detections of dissolved petroleum compounds reported in the soils, additional soil assessment activities appear warranted at the site.

F. Chemicals of Concern – Groundwater

Well Installation Information

Well No.	Installation Date	Development Date	Sampling Date
02567-MW1	4/16/2012	4/17/2012	4/17/2012
02567-MW2	4/16/2012	4/17/2012	4/17/2012
02567-MW3	4/16/2012	4/17/2012	4/17/2012

Monitoring wells 02567-MW-1, 02567-MW-2, and 02567-MW-3 were installed during this Tier I Assessment. Newly installed monitoring wells were developed using new disposable polyethylene bailer at each well.

Soil Analytical Data – Monitoring Wells

Monitoring well 02567-MW-1 was installed in the location of soil boring SB-4. A soil sample was collected from soil boring SB-4 at 4 feet below ground surface prior to the installation of monitoring well 02567-MW-1. Monitoring well 02567-MW-2 was installed in the location of soil boring SB-8. A soil sample was collected from soil boring SB-8 at 4 feet below ground surface prior to the installation of monitoring well 02567-MW-2. The soil samples collected were analyzed for benzene, toluene, ethylbenzene, total xylenes (collectively referred to as BTEX), methyl-tert butyl ether (MTBE), naphthalene, total lead, polynuclear aromatic compounds (PAHs), and total petroleum hydrocarbon (TPH) – diesel range organics (DRO). Please refer to the table on page 7 containing soil analytical data for the results.

Additionally, the soil sample collected from soil boring SB-4 at 4 feet below ground surface was submitted for grain size and hydrometer analyses. Please refer to page 3 for discussion on the grain size analysis.

Monitoring well 02567-MW-2 was installed in the location of background soil boring SB-8. A soil sample was collected from soil boring SB-8 at 4 feet below ground surface prior to the installation of monitoring well 02567-MW-2. The soil sample collected was analyzed for total organic carbon (TOC). Please refer to the table on page 7 containing soil analytical data for the results.

Summary of Monitoring Wells and Groundwater Data (4/17/2012)

Well Identification	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	Free Product (feet)	Screened Interval (feet)
02567-MW-1	78.57	5.50	73.07	NA	3-13
02567-MW-2	78.77	5.11	73.66	NA	3-13
02567-MW-3	80.14	5.85	74.29	NA	3-13

*Groundwater elevation adjusted for free product using a density of 0.75 g/cc for petroleum
**Not Applicable as no free product was detected

Groundwater Analytical Data[1] (µg/L, except where noted differently)

CoC	RBSL[2]	02567-MW1	02567-MW2	02567-MW3	02567-SW1	02567-SW2
Free Product Thickness	----	N/A[3]	N/A	N/A	N/A	N/A
Benzene	5	**5110**	3.7 J	2.3 J	<5.0	<5.0
Toluene	1,000	**6520**	5.0 J	14.7	2.6 J	<5.0
Ethyl benzene	700	**873J**	<5.0	<5.0	<5.0	<5.0
Total Xylenes	10,000	3940J	<15	<15	<15	<15
MTBE	40	**43200**	4.0 J	<5.0	<5.0	<5.0
Naphthalene	25	<2000	<5.0	<5.0	<5.0	<5.0
Benzo(a)anthracene	10	<14.3	<12.5	<15.4	N/A	N/A
Benzo(b)fluoranthene	10	1.5 J	<12.5	<15.4	N/A	N/A
Benzo(k)fluoranthene	10	1.7 J	<12.5	<15.4	N/A	N/A
Chrysene	10	<14.3	<12.5	<15.4	N/A	N/A
Dibenz(a,h)anthracene	10	<14.3	<12.5	<15.4	N/A	N/A
Total Lead	15	**81.0**	**158**	**241**	N/A	N/A
EDB	0.05	<0.020	<0.021	<0.020	N/A	N/A
1,2-DCA	5	<2000	<5.0	<5.0	N/A	N/A
Dissolved Oxygen(mg/L)	----	1.61	0.61	1.76	7.17	3.30

Notes:

1. Analyses for BTEX, naphthalene, and 1,2-DCA by EPA Method 8260; analyses for PAHs by EPA Method 8270.
2. May 2001 RBSLs in µg/L.
3. Not Applicable.
4. Concentrations in bold face type exceeded the RBSL.
5. Less than the reporting limit specified in the laboratory report.
6. J-value represents an estimated concentration detected above the method detection limit and below the reporting limit.
7. Additional CoC detected include Fluorene, Indeno(1,2,3-cd)pyrene, 1-Methylnaphthalene, 2-Methylnaphthalene, Phenanthrene, and Tertiary Amyl Alcohol,

Additional Comments: Two surface water samples were collected in the vicinity of the site. 02567-SW1 was collected from a surface water runoff ditch to the north of the subject site. 02567-SW2 was collected from the marsh area northeast of the subject site approximately 70 feet from MW-2.

G. **Aquifer Characteristics:** Unconfined
Hydraulic Conductivity: 0.6108 feet/day (MW-2) and 2.4110 feet/day (MW-3)
Hydraulic Gradient: 0.00608 ft/ft west
Effective Porosity: 23%
Estimated Seepage Velocity: 5.89 ft/yr (02567-MW2) and 23.26 ft/yr (02567-MW3)

III TIER I EVALUATION

A. Current Land Use
Identify any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1,000-foot radius for current land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Yes/No)	Exposure Point or Reason for Non-selection	Data Requirements (If pathway selected)
Air	Inhalation Explosion Hazard	Yes **No** Yes **No**	Potential exposure point if soil is excavated	Vapor monitoring
Groundwater	Ingestion Dermal Contact Volatile Inhalation	Yes **No** Yes **No** Yes **No**	No water supply wells were identified within a 1,000-foot radius of the source area; municipal water is available.	Groundwater Monitoring
Surface Water	Ingestion Dermal Contact Volatile Inhalation	**Yes** No **Yes** No **Yes** No	Surface water runoff ditch north of the site and marsh area approximately 70 feet northeast of the site	Fate and Transport Model
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes **No** Yes **No** Yes **No** **Yes** No	Source area is predominately covered with asphalt and concrete. Exposure could result only if cap breached through excavation. Groundwater has been affected by the release.	Engineering Controls Soil leachability model
Subsurface Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes **No** Yes **No** Yes **No** **Yes** No	Source area is predominately covered with asphalt and concrete. Exposure could result only if cap breached through excavation. Groundwater has been affected by the release.	Engineering Controls Soil leachability model

B. Future Land Use

Identify any potential receptors or human exposure pathways (e.g. basements, contaminated soils from UST closures, etc.) within a 1,000-foot radius for future land use.

Media (for exposure)	Exposure Route	Pathway Selected for Evaluation (Yes/No)	Exposure Point or Reason for Non-selection	Data Requirements (IF pathway selected)
Air	Inhalation Explosion Hazard	**Yes** No **Yes** No	Potential exposure point if soil is excavated.	Vapor monitoring
Groundwater	Ingestion Dermal Contact Volatile Inhalation	Yes **No** Yes **No** Yes **No**	No water supply wells were identified within a 1,000-foot radius of the source area; municipal water is available.	Groundwater Monitoring
Surface Water	Ingestion Dermal Contact Volatile Inhalation	**Yes** No **Yes** No **Yes** No	Surface water runoff ditch north of the site and marsh area approximately 70 feet northeast of the site	Fate and Transport Model
Surficial Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes **No** Yes **No** Yes **No** **Yes** No	Source area is predominately covered with asphalt and concrete. Exposure could result only if cap breached through excavation. Groundwater has been affected by the release.	Engineering controls Soil leachability model.
Subsurface Soil	Ingestion Dermal Contact Volatile Inhalation Leaching to Groundwater	Yes **No** Yes **No** Yes **No** **Yes** No	Source area is predominately covered with asphalt and concrete. Exposure could result only if cap breached through excavation. Groundwater has been affected by the release.	Engineering controls Soil leachability model.

Recommendations for Further Action:

Concentrations of BTEX and naphthalenes were detected above the RBSLs in soil during this Tier I Assessment. Concentrations of benzene, toluene, ethylbenzene, and MTBE exceeding their respective RBSL were detected in the groundwater sample collected from monitoring well 02567-MW1. Groundwater samples collected from monitoring wells 02567-MW2 and 02567-MW3 were reported to contain high concentrations of lead. Groundwater samples collected from surface water in the vicinity of the site did not contain concentrations of CoC above the RBSLs.

Based on the concentrations of CoC in groundwater, Tier II assessment activities should be conducted to determine the horizontal and vertical extent of the petroleum impacted groundwater at the site.

Attachments:

Figures

Figure 1: Site Locus
Figure 2: Site Vicinity Map
Figure 3: Site Plan
Figure 4: Soil Quality Map
Figure 5: Groundwater Elevation Map
Figure 6: Groundwater Quality Map

Table

Table 1: Summary of Adjacent Property Owners and Addresses
Table 2: Summary of Groundwater Analytical Data – Eight Oxygenates

Appendices

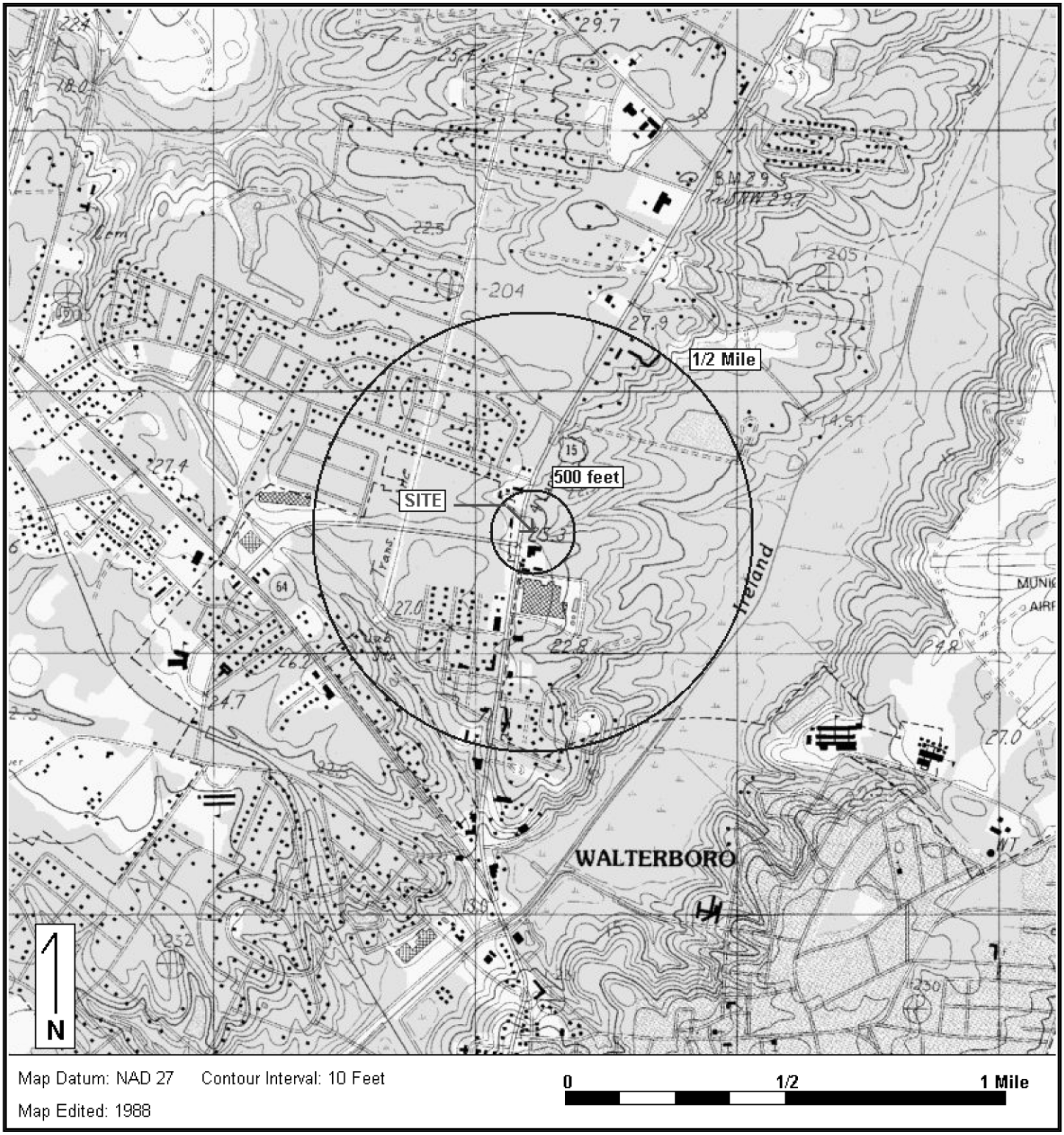
Appendix A: Surveyed Site Map
Appendix B: Boring Logs
Appendix C: Well Construction Records
Appendix D: Groundwater Sampling Data Sheets
Appendix E: Laboratory Reports – Soil and Groundwater Samples
Appendix F: Investigative-Derived Waste Manifest
Appendix G: Slug Test Data
Appendix H: Local Zoning Ordinance
Appendix I: Local Tax Map

FIGURES

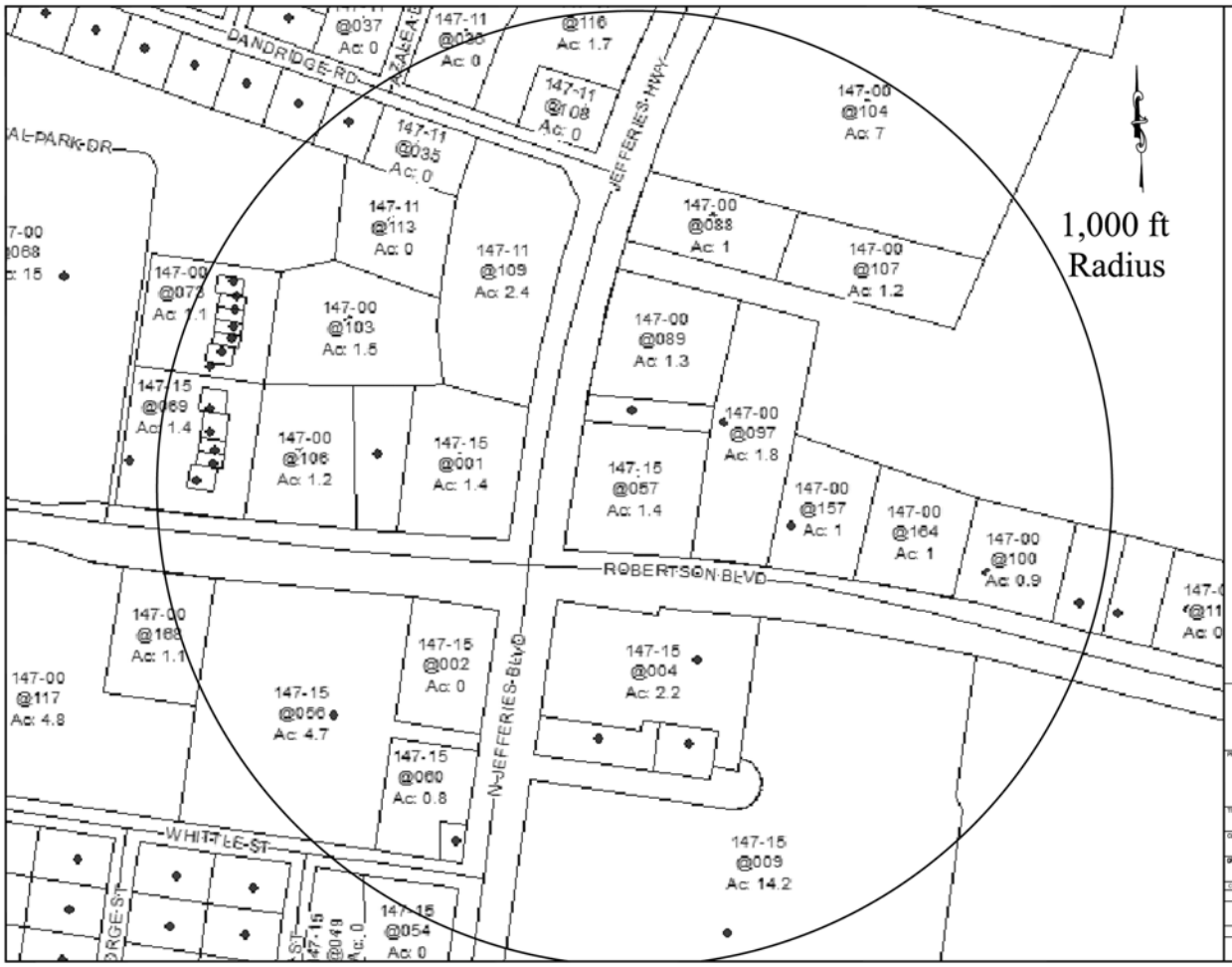
Environmental Compliance Services, Inc.
13504 South Point Boulevard
Charlotte, NC 28273
Phone 704.583.2711
www.ecsconsult.com

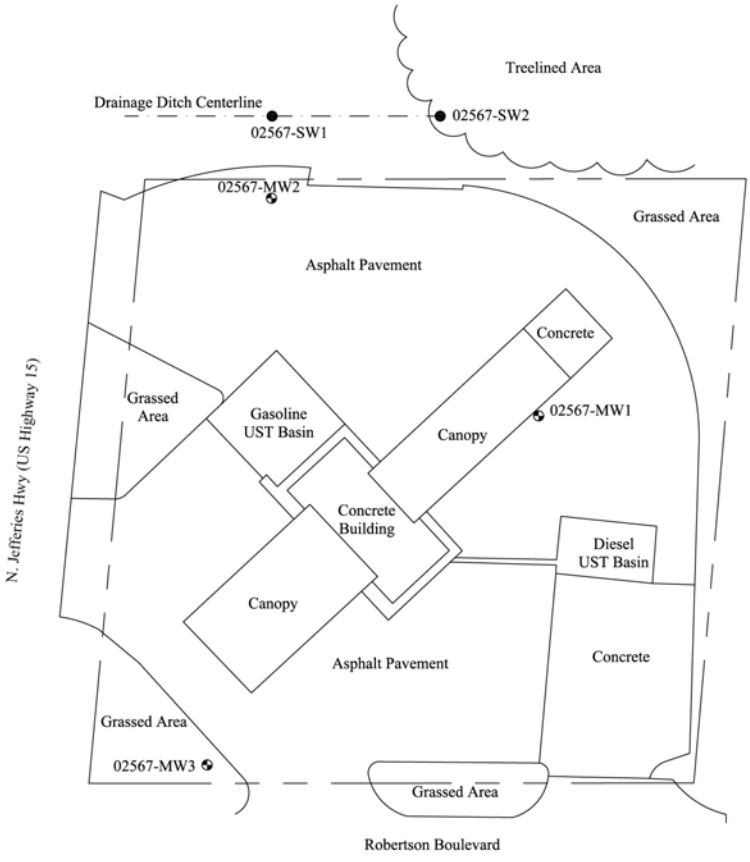
Rhodesway North
1400 Jeffries Highway
Walterboro, SC 29488

Figure 1: SITE LOCUS



Base Map: U.S. Geological Survey; Quadrangle Location: Walterboro, SC
Lat/Lon: 32° 55' 18" NORTH, 80° 39' 57" WEST - UTM Coordinates: 17 531237 EAST / 3642656 NORTH
Generated By: Kevin Collins


DANDRIDGE RD
AL-PARK-DR
JEFFERIES HWY
ROBERTSON BLVD
N JEFFERIES BLVD
WHITTLE ST
147-11 @037 Ac: 0
147-11 @116 Ac: 1.7
147-11 @108 Ac: 0
147-11 @035 Ac: 0
147-11 @113 Ac: 0
147-11 @109 Ac: 2.4
147-00 @104 Ac: 7
147-00 @088 Ac: 1
147-00 @107 Ac: 1.2
147-00 @089 Ac: 1.3
147-00 @097 Ac: 1.8
147-00 @073 Ac: 1.1
147-00 @103 Ac: 1.5
147-15 @069 Ac: 1.4
147-00 @106 Ac: 1.2
147-15 @001 Ac: 1.4
147-15 @057 Ac: 1.4
147-00 @157 Ac: 1
147-00 @164 Ac: 1
147-00 @100 Ac: 0.9
147-00 @166 Ac: 1.1
147-00 @117 Ac: 4.8
147-15 @050 Ac: 4.7
147-15 @002 Ac: 0
147-15 @060 Ac: 0.8
147-15 @004 Ac: 2.2
147-15 @009 Ac: 14.2
147-15 @054 Ac: 0
1,000 ft Radius
Legend
Approximate Property Line
Monitoring Well
MW-1 Well I.D.
General Notes:
All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.
ecs
585 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778
PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC
TITLE:
SITE VICINITY MAP
CLIENT:
Rhodes Oil Company
GRAPHIC SCALE: 200 100 0 100 200
COMPUTER CADFILE
DRAWN BY: BS
DESIGNED BY: ECS
CHECKED BY: MC
APPROVED BY: MC
SCALE: 1" = 200'
DATE: 7/9/12
JOB NO.: 14-215778
FIGURE NO.: 2



Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
585 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
SITE PLAN

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
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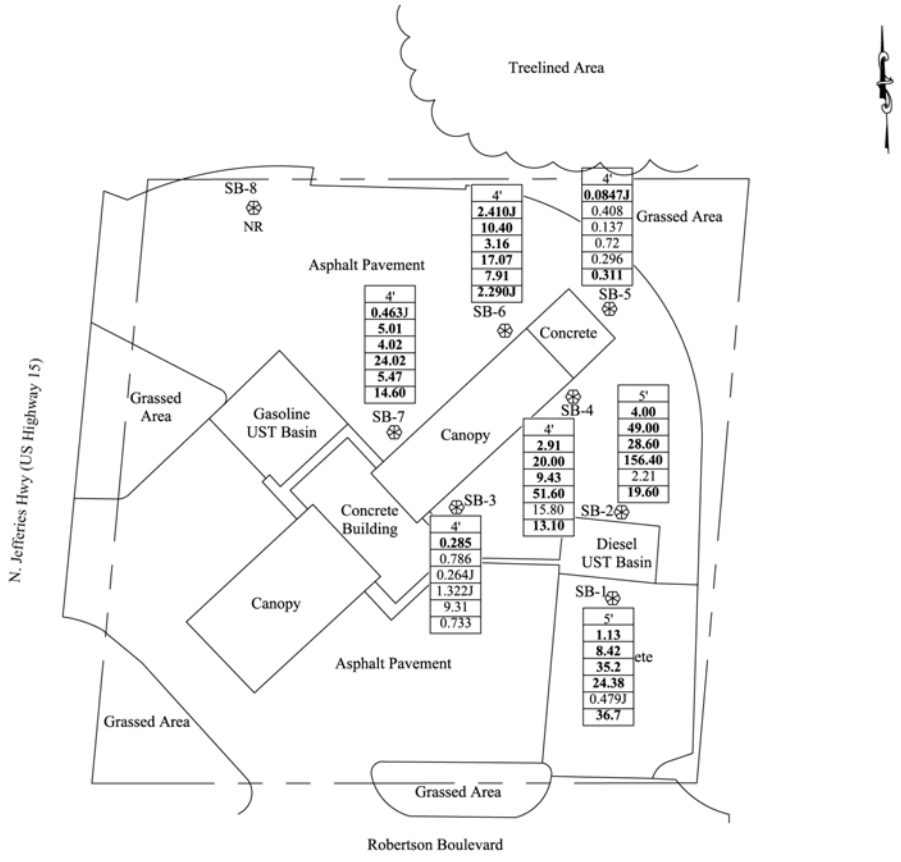

Legend

Approximate Property Line
Soil Boring
Monitoring Well
MW-1 Well I.D.

10'	Sample Depth
0.007	Benzene
1.45	Toluene
1.15	Ethylbenzene
14.5	Total Xylenes
N/A	MTBE
0.036	Naphthalene

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
585 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
SOIL QUALITY MAP

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
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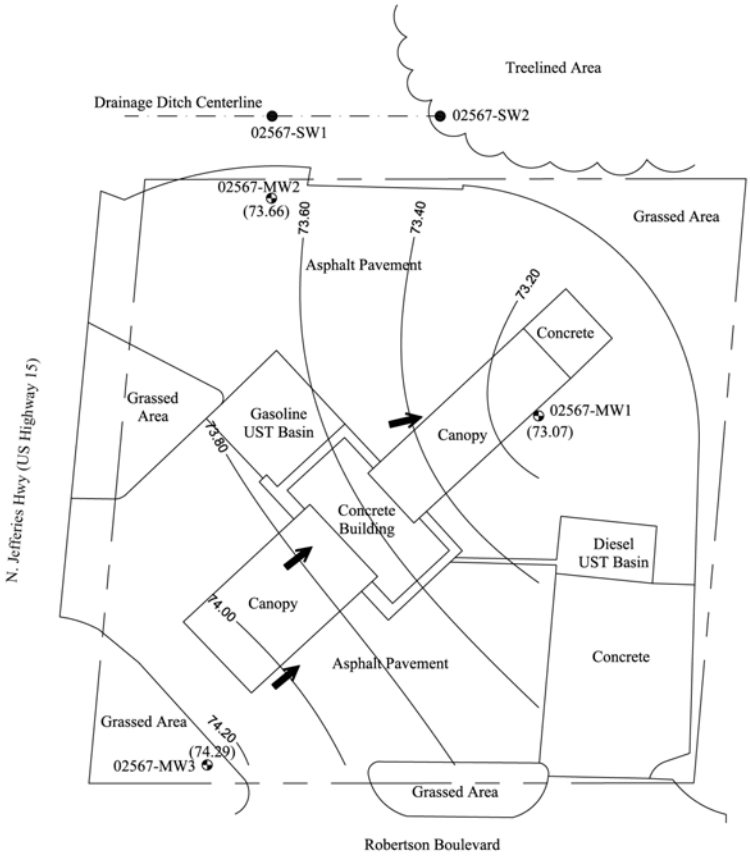

Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

(73.71) Water Table Elevation

90.0 Water Table Contour (Dashed where inferred)

Flow Direction Indicator

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

Horizontal, and vertical locations of wells, and selected site features determined through measurements made by representatives of ECS.

Water table elevation are based on an assumed benchmark of 100 feet above mean sea level.

Water table elevations are based on measurements made on April 17, 2012.

Water table contours, and flow directions assume homogenous, isotropic aquifer conditions, and horizontal flow.

Fluctuations in the level of the water table may occur due to factors not accounted for at the time of measurement.

Water table contours are interpolated between data points, and inferred in other areas.

ecs
585 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE:
GROUNDWATER ELEVATION MAP

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
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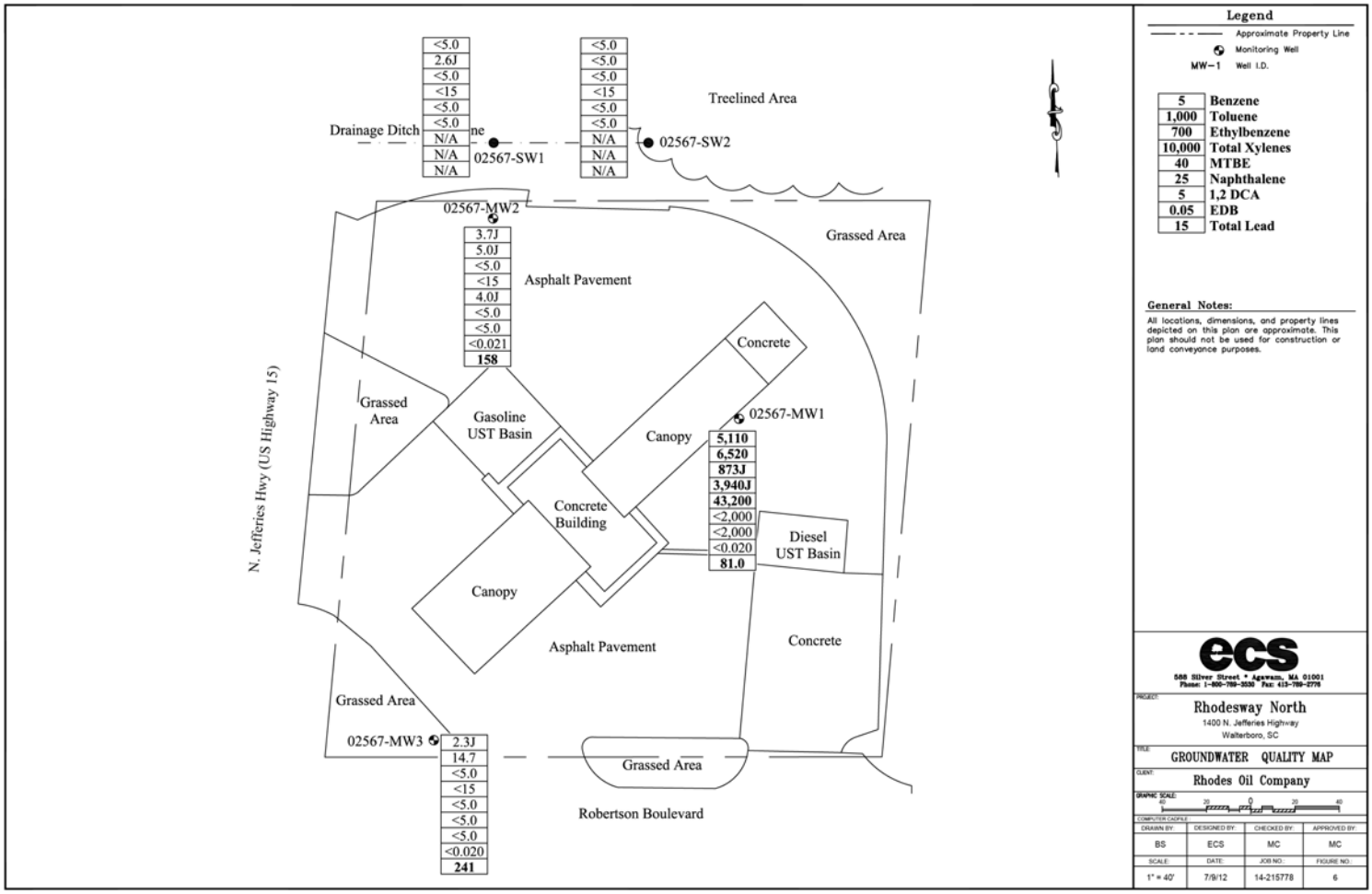


Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

5	**Benzene**
1,000	**Toluene**
700	**Ethylbenzene**
10,000	**Total Xylenes**
40	**MTBE**
25	**Naphthalene**
5	**1,2 DCA**
0.05	**EDB**
15	**Total Lead**

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
588 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778

PROJECT:
Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

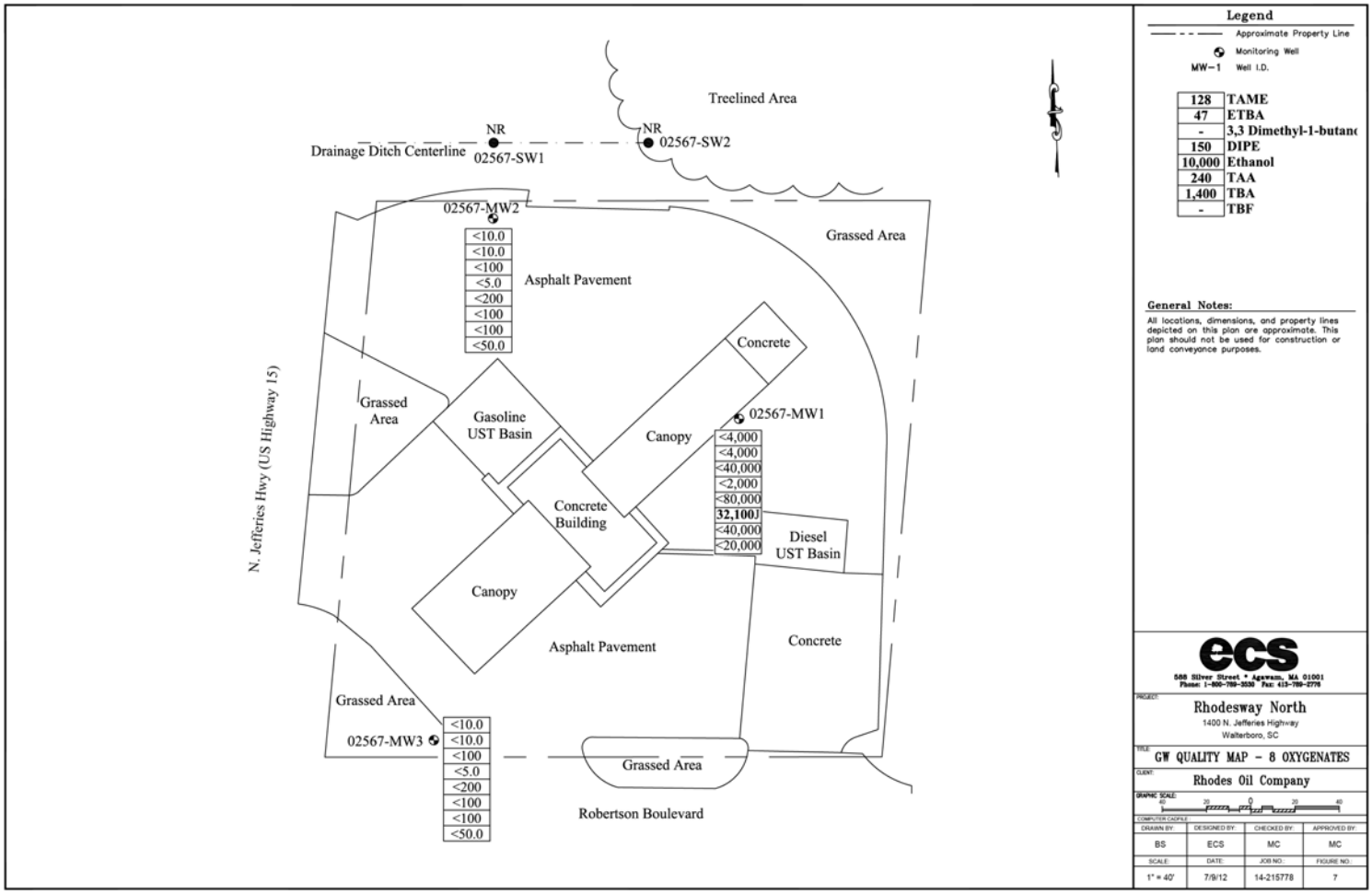
TITLE:
GROUNDWATER QUALITY MAP

CLIENT:
Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 40'	7/9/12	14-215778	6



Legend

Approximate Property Line

Monitoring Well

MW-1 Well I.D.

128	TAME
47	ETBA
-	3,3 Dimethyl-1-butanc
150	DIPE
10,000	Ethanol
240	TAA
1,400	TBA
-	TBF

General Notes:

All locations, dimensions, and property lines depicted on this plan are approximate. This plan should not be used for construction or land conveyance purposes.

ecs
585 Silver Street * Agawam, MA 01001
Phone: 1-800-780-3630 Fax: 413-789-0778

PROJECT: Rhodesway North
1400 N. Jefferies Highway
Walterboro, SC

TITLE: GW QUALITY MAP - 8 OXYGENATES

CLIENT: Rhodes Oil Company

GRAPHIC SCALE: 40 20 0 20 40

COMPUTER CADFILE:

DRAWN BY:	DESIGNED BY:	CHECKED BY:	APPROVED BY:
BS	ECS	MC	MC
SCALE:	DATE:	JOB NO.:	FIGURE NO.:
1" = 40'	7/9/12	14-215778	7

TABLES

TABLE 1

ADJACENT PROPERTY OWNERS AND ADDRESSES[1]
RHODESWAY NORTH

Parcel Identification	Property Address	Occupant / Land Use	Distance / Direction from Site	Wells on this Property	Property Owner Name	Property Owner Address
147-15-00-057.000 (Site)	1400 Jefferies Highway	Petroleum Retail	SITE	02567-MW1, 02567-MW2, 02567-MW3	Rhodes Properties of Walterboro LP	305 Moore Street Walterboro, SC 29488
147-00-00-016.000	Jefferies Highway		North		Paul Walker	PO Box 1131 Walterboro, SC 29488
147-00-00-097.000	779 Robertson Blvd		East		Salemi/Redi Walsh Family LP, Northfield Center Development Corp	10121 Northfield Northfield, OH 44067
147-15-00-004.000	1326 Jefferies Highway	Walgreen's	South		MD Walt LLC c/o Walgreen Co	PO Box 901 Deerfield IL, 60015
147-15-00-002.000	600 Robertson Blvd	Bank	SW		First National Bank of Orangeburg	PO Box 1287 Orangeburg, SC 29116
147-15-00-002.000	555 Robertson Blvd	CVS	West		SCP 2001 A-CSF-75 LLCA Delaware LTD	1 CVS Drive Woonsocket, RI 02895

Note:
1. Adjacent/adjoining properties are keyed to **Figure 2**.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA[1]
EIGHT OXYGENATES
RHODESWAY NORTH

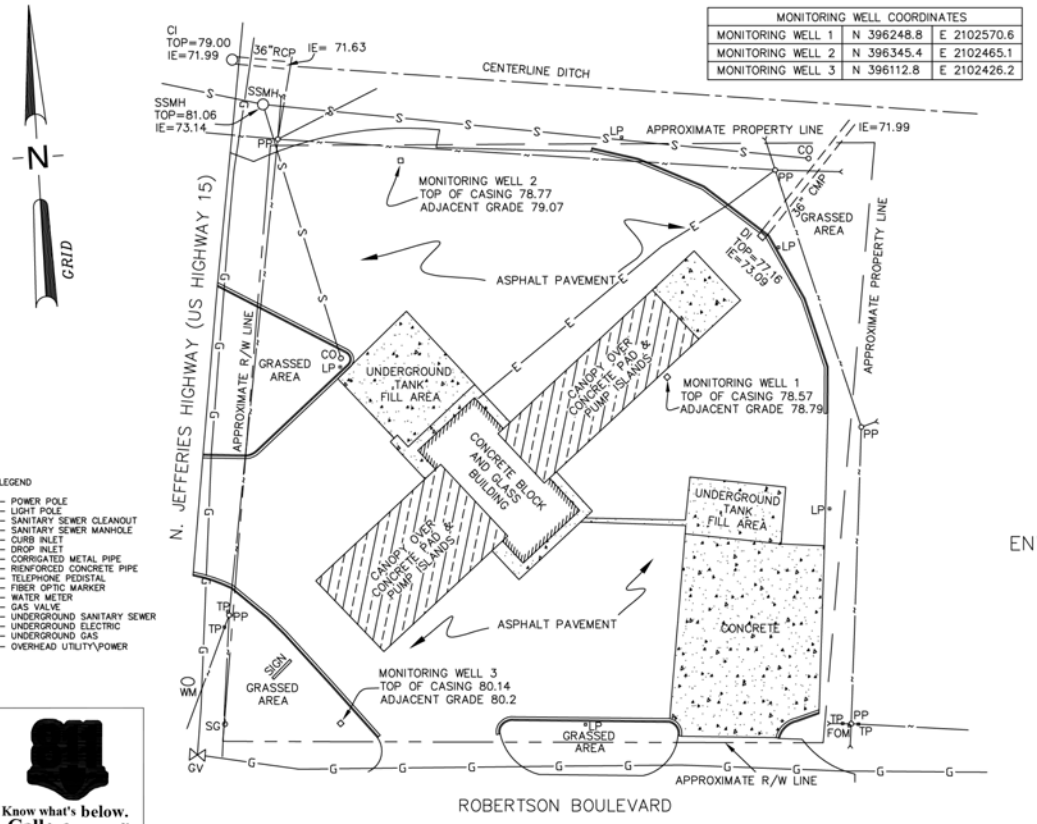
Well ID	Date Sampled	Tertiary Amyl Methyl Ether (TAME) (µg/L)	Ethyl tert-Butyl Ether (ETBE) (µg/L)	3,3-Dimethyl-1-butanol (µg/L)	Di-isopropyl Ether (DIPE) (µg/L)	Ethanol (µg/L)	Tertiary Amyl Alcohol (TAA) (µg/L)	Tertiary Butyl Alcohol (TBA) (µg/L)	Tertiary Butyl Formate (TBF) (µg/L)
02567-MW1	4/17/2012	<4000[2]	<4000	<40000	<2000	<80000	**32,100 J**[3]	<40000	<20000
02567-MW2	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-MW3	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
02567-SW1	4/17/2012	NR[4]	NR	NR	NR	NR	NR	NR	NR
02567-SW2	4/17/2012	NR	NR	NR	NR	NR	NR	NR	NR
Trip Blank	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
Duplicate	4/17/2012	<4000	<4000	<40000	<2000	<80000	**40,800**	<40000	<20000
Field Blank	4/17/2012	<10.0	<10.0	<100	<5.0	<200	<100	<100	<50.0
Action Level[5]		128	47	--	150	10,000	240	1,400	--

Notes:

1. Analyses by Method 8260B.
2. Less than the reporting limit specified in the laboratory report.
3. Less than the reporting limit specified in the laboratory report.
4. Analysis not requested.
5. August 2008 Action Levels.

APPENDIX A

SURVEYED SITE MAP



MONITORING WELL COORDINATES		
MONITORING WELL 1	N 396248.8	E 2102570.6
MONITORING WELL 2	N 396345.4	E 2102465.1
MONITORING WELL 3	N 396112.8	E 2102426.2

LOCATION MAP
(NOT TO SCALE)

NOTES

1.) THIS IS NOT A BOUNDARY SURVEY. ALL PROPERTY LINES ARE APPROXIMATE AND SCALED FROM REFERENCE DRAWINGS.

2.) HORIZONTAL DATUM IS NAD83(2007), VERTICAL DATUM NAVD 88.

3.) THIS SURVEY IS NOT MEANT TO SHOW ALL SITE IMPROVEMENTS.

LEGEND

- PP – POWER POLE
- LP – LIGHT POLE
- CO – SANITARY SEWER CLEANOUT
- SSMH – SANITARY SEWER MANHOLE
- CI – CURB INLET
- DI – DROP INLET
- CMP – CORRIGATED METAL PIPE
- RCP – RIENFORCED CONCRETE PIPE
- TP – TELEPHONE PEDISTAL
- FOM – FIBER OPTIC MARKER
- WM – WATER METER
- GV – GAS VALVE
- S – UNDERGROUND SANITARY SEWER
- E – UNDERGROUND ELECTRIC
- G – UNDERGROUND GAS
- OHP – OVERHEAD UTILITY\POWER

Know what's below.
Call before you dig.

NOTICE:
CONSIDERABLE EFFORT HAS BEEN MADE TO DETERMINE THE LOCATION OF UNDERGROUND UTILITIES. SOME LOCATIONS ARE ACTUAL FIELD MEASUREMENTS AND SOME ARE TAKEN FROM UTILITY RECORDS. THIS PLAN DOES NOT WARRANT THAT UTILITIES ARE SHOWN ACCURATELY NOR THAT ALL UTILITIES ARE SHOWN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES PRIOR TO BEGINNING DIGGING OPERATIONS. CALL PALMETTO UTILITIES PROTECTION SERVICE AT 1-888-721-7877 A MINIMUM OF 3 WORKING DAYS BEFORE DIGGING. ANY UTILITIES UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES TO EXISTING UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.

MONITORING WELL SURVEY

FOR

ENVIRONMENTAL COMPLIANCE SERVICES, INC.

RHODEWAY NORTH

1400 N. JEFFERIES HIGHWAY

WALTERBORO, SOUTH CAROLINA

1"=40' JULY 5, 2012

REVISED JULY 9, 2012

GRAPHIC SCALE

40 0 40 80

(IN FEET)

1 inch = 40 ft.

FORSBERG ENGINEERING AND SURVEYING, INC.

1587 SAVANNAH HIGHWAY SUITE B

P.O. BOX 30575

CHARLESTON, SOUTH CAROLINA 29417

(843) 571-2622 FAX (843) 571-6780

CIVIL ENGINEERING, SURVEYING AND LAND PLANNING

4346

APPENDIX B

BORING LOGS

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	2.0	tan/grey silty SAND fine-medium, dry				
	4.0			1044	5.0	
	6.0	grey/black silty SAND fine-medium, moist				
	8.0					
	10.0	Boring terminated at 10.0 feet. Sampled @ 5'.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-1
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	2.0	brown/grey silty SAND, fine-medium,dry				
	4.0			1158	5.0	
	6.0	same -moist/wet				
	8.0					
	10.0	Boring terminated at 10.0 feet. Sampled @ 5'.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-2
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
		black/grey sandy CLAY, dry				
	2.0	tan/grey silty SAND fine-medium,dry		146	2	
	4.0			1398	4	
		same - wet				
	6.0	Boring terminated at 6.0 feet. Sampled @ 4'.			6	
	8.0					
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-3
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0	Asphalt/fill				
		black/grey sandy CLAY, dry				
	2.0	tan/grey sandy CLAY,dry		186	2	
	4.0			1492	4	
		brown/black silty SAND fine-medium wet				
	6.0					
	8.0					
	10.0	grey silty SAND fine-medium wet				
	15.0	Boring terminated @ 14.0ft. 2' pvc well installed w/ 10' of screen. Sand to 2ft, bentonite to 1ft. Grout to surface, flush mount manhole. SB-4converted to MW-1. SB-4 sampled at 4', highest PID reading of all soil samples,				
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-4 MW-1
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-216316

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0	Concrete/fill				
	2.0	grey/tan silty clayey SAND fine-medium, dry		186	2	
	4.0			1492	4	
	6.0	same - wet				
		Boring terminated at 6.0 feet. Sampled @ 4'.				
	8.0					
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-5
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	Asphalt/fill				
	2.0	black/grey clayey SAND fine-medium, dry		327	2	
	4.0			1091	4	
	6.0	same - wet				
		Boring terminated at 6.0 feet. Sampled @ 4'.				
	8.0					
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-6
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0	Asphalt/fill				
	2.0	black/grey clayey SAND fine-medium, dry		137	2	
	4.0			1294	4	
	6.0	same - wet				
		Boring terminated at 6.0 feet. Sampled @ 4'.				
	8.0					
	10.0					
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-7
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test

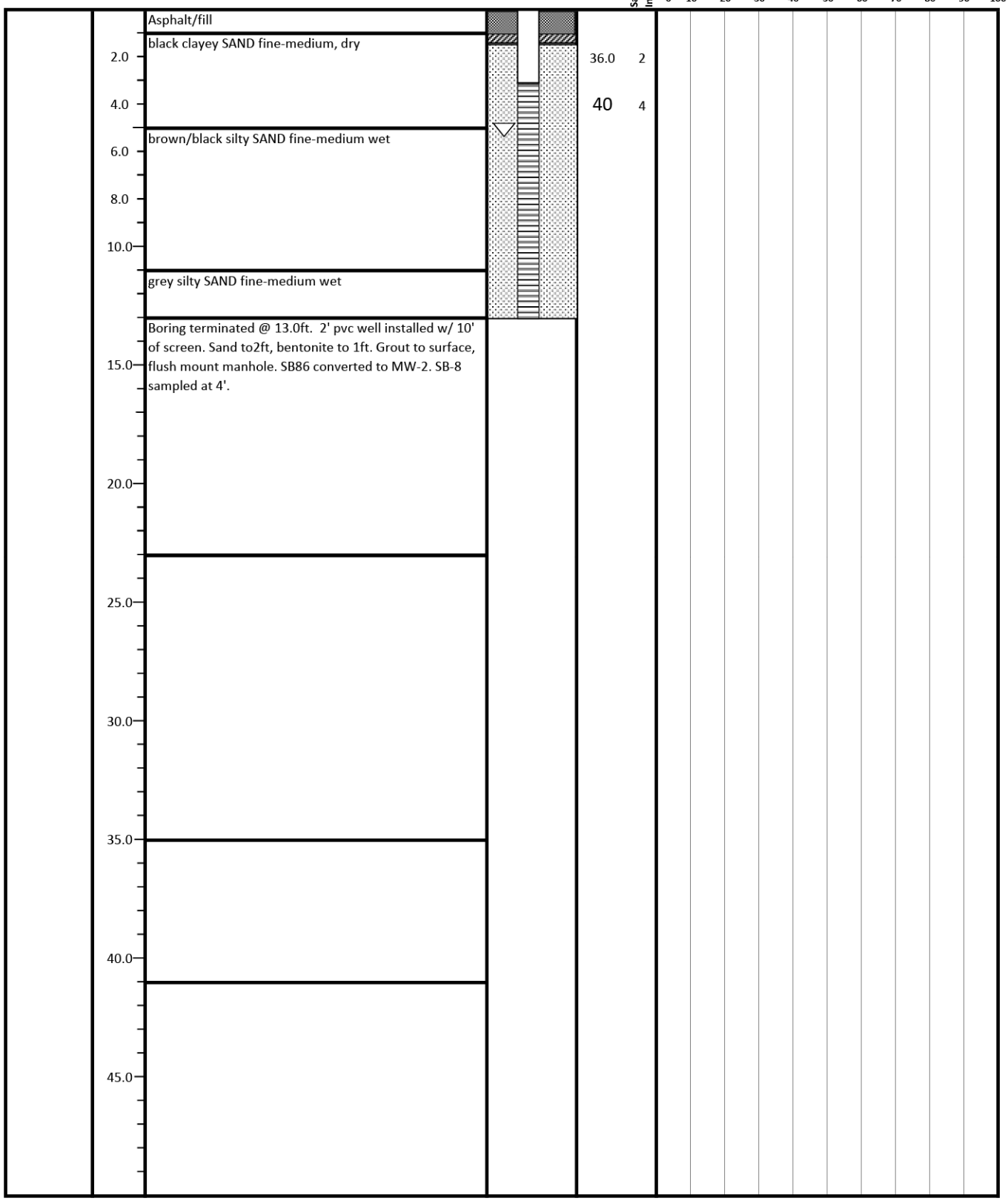
Asphalt/Concrete
Fill
Clay

Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet



REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: SB-8 / MW-2
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/17/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

BORING LOG

Job Name: Rhodesway North
Location: 1400 Jeffries Hwy.
Walterboro, SC

Datum Elevation: feet
Height of Riser: feet

ELEVATION (feet)	DEPTH (feet)	DESCRIPTION	LITHOLOGY DIAGRAM	PID (ppm)	Sample Interval	PENETRATION - BLOWS PER FOOT (0 10 20 30 40 50 60 70 80 90 100)
	0.0	grass/topsoil				
		tan/grey silty SAND fine-medium, dry				
	2.0					
	4.0			1.3	5	
		black/grey silty SAND fine-medium wet				
	6.0					
	8.0					
	10.0			1.1	10	
		tan silty SAND fine-medium wet				
	14.0	Boring terminated @ 14.0ft. 2' pvc well installed w/ 10' of screen. Sand to2ft, bentonite to 1ft. Grout to surface, flush mount manhole.				
	15.0					
	20.0					
	25.0					
	30.0					
	35.0					
	40.0					
	45.0					

REMARKS: Drilled with GP 6620DT
Borehole diameter approximately 3".

DRILLED BY: GEX - James Hess
LOGGED BY: ECS - P. Pike

BORING NUMBER: MW-3
DATE STARTED: 4/16/2012
DATE COMPLETED: 4/16/2012
PROJECT NUMBER: 14-215778

Geologic Exploration - GEX

GW level @ time of boring
Hand Auger
Standard Penetration Test
Asphalt/Concrete
Fill
Clay
Silt
Sand

APPENDIX C

WELL CONSTRUCTION RECORDS

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFERIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.02" Longitude: 80° 39' 57.13"

3. PUBLIC SYSTEM NAME: UST Permit 02567 **PUBLIC SYSTEM NUMBER:** 02567-MW1

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK/GRAY SANDY SILT	7.0	7.0
BLACK/GRAY SANDY CLAY SILT	7.0	14.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MW-1 BENTONITE SEAL FROM 1.0 TO 2.0 FT.

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24463

8. USE:
☐ Residential ☐ Public Supply ☐ Process- ☐ Irrigation ☐ Air Conditioning ☐ Emergency ☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/12 Date Completed: 04/16/12

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 6.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: JAMES HESS **CERT. NO.:** 01929
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Signed: James T. Hess Jr. Date: 04/18/12
Well Driller
If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

D H E C
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFERIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.02" Longitude: 80° 39' 57.13"

3. PUBLIC SYSTEM NAME: UST Permit 02567 **PUBLIC SYSTEM NUMBER:** 02567-MW2

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK/GRAY SANDY SILT	7.0	7.0
BLACK/GRAY SANDY CLAY SILT	7.0	14.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MW-2 BENTONITE SEAL FROM 1.0 TO 2.0 FT.

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24463

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 13.0 ft. Date Started: 04/16/12 Date Completed: 04/16/12

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 3.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 3.0 ft. and 13.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 6.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 2.0 ft. to 13.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 1.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P._____ Volts_____ Length of drop pipe ___ ft. Capacity ____ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: JAMES HESS **CERT. NO.:** 01929
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: James T. Hess Jr. (Well Driller) Date: 04/18/12

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003)

COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 898-4300

DHEC — PROMOTE PROTECT PROSPER

1. WELL OWNER INFORMATION:
Name: RHODES OIL COMPANY (last) (first)
Address: PO BOX 1545
City: WALTERBORO State: SC Zip: 29488
Telephone: Work: Home:

2. LOCATION OF WELL: SC **COUNTY:** COLLETON
Name: RHODESWAY NORTH
Street Address: 1400 JEFFERIES HIGHWAY
City: WALTERBORO Zip: 29488
Latitude: 32° 55' 19.02" Longitude: 80° 39' 57.13"

3. PUBLIC SYSTEM NAME: UST Permit 02567 **PUBLIC SYSTEM NUMBER:** 02567-MW3

4. ABANDONMENT: ☐ Yes ☑ No
Grouted Depth: from _____ ft. to _____ ft.

Formation Description	*Thickness of Stratum	Depth to Bottom of Stratum
BLACK/GRAY SANDY SILT	7.0	7.0
BLACK/GRAY SANDY CLAY SILT	7.0	14.0
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

5. REMARKS:
MW-3 BENTONITE SEAL FROM 2.0 TO 3.0 FT.

6. TYPE: ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☑ Other AUGER

7. PERMIT NUMBER: UMW-24463

8. USE:
☐ Residential ☐ Public Supply ☐ Process
☐ Irrigation ☐ Air Conditioning ☐ Emergency
☐ Test Well ☑ Monitor Well ☐ Replacement

9. WELL DEPTH (completed) 14.0 ft. Date Started: 04/16/12 Date Completed: 04/16/12

10. CASING: ☑ Threaded ☐ Welded
Diam.: 2 INCH
Type: ☑ PVC ☐ Galvanized ☐ Steel ☐ Other
2.0 in. to 4.0 ft. depth
_____ in. to _____ ft. depth
Height: Above ☐ Below ☐
Surface 0.0 ft.
Weight _____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

11. SCREEN:
Type: SCH 40 PVC Diam.: 2 INCH
Slot/Gauge: .010 Length: 10.0 FEET
Set Between: 4.0 ft. and 14.0 ft.
_____ ft. and _____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☑ No

12. STATIC WATER LEVEL 6.0 ft. below land surface after 24 hours

13. PUMPING LEVEL Below Land Surface.
_____ ft. after _____ hrs. Pumping _____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: _____

14. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

15. ARTIFICIAL FILTER (filter pack) ☑ Yes ☐ No
Installed from 3.0 ft. to 14.0 ft.
Effective size 1.43 Uniformity Coefficient 1.30

16. WELL GROUTED? ☑ Yes ☐ No
☑ Neat Cement ☐ Bentonite ☐ Bentonite/Cement ☐ Other _____
Depth: From 0.0 ft. to 2.0 ft.

17. NEAREST SOURCE OF POSSIBLE CONTAMINATION: _____ ft. _____ direction
Type _____
Well Disinfected ☐ Yes ☐ No Type: _____ Amount: _____

18. PUMP: Date installed: _____ Not installed ☐
Mfr. Name: _____ Model No.: _____
H.P. _____ Volts _____ Length of drop pipe ___ ft. Capacity ___ gpm
TYPE: ☐ Submersible ☐ Jet (shallow) ☐ Turbine ☐ Jet (deep) ☐ Reciprocating ☐ Centrifugal

19. WELL DRILLER: JAMES HESS **CERT. NO.:** 01929
Address: (Print) 176 COMMERCE BLVD
STATESVILLE, NC 28625
Level: A ☐ B ☐ C ☑ D ☐ (circle one)
Telephone No.: 704-872-7686 Fax No.: 704-872-0248

20. WATER WELL DRILLER'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.

Signed: James T. Hess Jr. Well Driller Date: 04/18/12

If D Level Driller, provide supervising driller's name:

DHEC 1903 (07/2003) **COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)**

APPENDIX D

GROUNDWATER SAMPLING DATA SHEETS

GAUGE REPORT

Environmental Compliance Services, Inc.
13504 South Point Blvd., Unit F
Charlotte, North Carolina 28273

Project Name	Rhodesway North	Location	Walterboro, SC
Project No.	14-215778	Date	4/17/2012
Measured By	P. Pike	Weather	Sunny, 80

Well ID	Depth to Product (feet)	Depth to Water (feet)	Product Thickness (feet)	Product Recovered (gallons)	Well Depth (feet)	Volume Purged (gallons)
02567-MW1	---	5.50	---	---	13.50	3.90
02567-MW2	---	5.11	---	---	13.26	3.99
02567-MW3	---	5.85	---		13.98	3.99

Remarks

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/17/12
Field Personnel P. Pike
General Weather Conditions Sunny
Ambient Air Temperature 80 F

Facility Name Rhodesway North Site ID# 02567

Quality Assurance:

pH Meter Horiba U-22 Conductivity Meter Horiba U-22
serial no. T908007 serial no. T908007
pH = 4.0 Standard
pH = 7.0 Standard
pH = 10.0 Standard

Chain of Custody

P. Pike		ECS Fridge	
Relinquished by	Date/Time	Received by	Date/Time
ECS Fridge	--	--	--
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW1**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C= 0.163
for a 4 inch well C= 0.652
Total Well Depth (TWD) 13.50 ft.
Depth to GW(DGW) 5.50 ft.

Length of Water Column (LWC=TWD-DGW) 8.00 ft.

1Csg. Vol. (LWC*C)= 8.00 X 0.163 = 1.30 gal.
3Csg. Volume = 3x 1.30 = 3.91 gals.(Std. Purge Vol)

Total Vol. of Water Purged Before Sampling 3.90 gal.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.30	1.30	1.30				0.00
Time (military)	9:35	9:38	9:41	9:45				9:55
pH (s.u.)	5.27	5.30	5.34	5.18				5.29
O.R.P. (mV)	94	83	65	34				30
Temperature (°C)	24.06	24.30	23.68	23.45				23.59
Specific Cond. (mS/cm)	0.469	0.518	0.421	0.342				0.399
Dissolved Oxygen (mg/L)	2.10	1.81	1.89	1.56				1.61
Turbidity (NTU)	>999	>999	>999	>999				>999

Remarks Well purged and sampled with new disposable poly - bailer.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy)	04/17/12		
Field Personnel	P. Pike		
General Weather Conditions	Sunny		
Ambient Air Temperature	80 F		
Facility Name	Rhodesway North	Site ID#	02567

Quality Assurance:

pH Meter	Horiba U-22	Conductivity Meter	Horiba U-22
serial no.	T908007	serial no.	T908007
pH = 4.0		Standard	
pH = 7.0		Standard	
pH = 10.0		Standard	

Chain of Custody

P. Pike		ECS Fridge	
Relinquished by	Date/Time	Received by	Date/Time
ECS Fridge	--	--	--
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW2**

Well Diameter (D)	2.0	inch			or feet
conversion factor(C): 3.143*(D/2)^2					
for a 2 inch well C=	0.163				
for a 4 inch well C=	0.652				
Total Well Depth (TWD)	13.26	ft.			
Depth to GW(DGW)	5.11	ft.			
Length of Water Column (LWC=TWD-DGW)	8.15	ft.			
1Csg. Vol. (LWC*C)=	8.15	X	0.163	=	1.33 gal.
3Csg. Volume = 3x	1.33	=	3.99		gals.(Std. Purge Vol)
Total Vol. of Water Purged Before Sampling	3.99	gal.			

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.33	1.33	1.33				0.00
Time (military)	10:43	10:46	10:49	10:52				11:00
pH (s.u.)	5.84	5.68	5.53	5.29				5.24
O.R.P. (mV)	16	58	92	114				107
Temperature (°C)	25.91	24.31	24.02	23.83				23.91
Specific Cond. (mS/cm)	0.710	0.414	0.311	0.265				0.227
Dissolved Oxygen (mg/L)	1.08	1.04	1.05	0.45				0.61
Turbidity (NTU)	152.0	>999	>999	>999				>999

Remarks: Well purged and sampled with new disposable poly - bailer.

South Carolina Department of Health and Environmental Control
Bureau of Underground Storage Tank Management

Field Data Information Sheet for Ground Water Sampling

Date(mm/dd/yy) 04/17/12
Field Personnel P. Pike
General Weather Conditions Sunny
Ambient Air Temperature 80 F

Facility Name Rhodesway North Site ID# 02567

Quality Assurance:

pH Meter Horiba U-22 Conductivity Meter Horiba U-22
serial no. T908007 serial no. T908007
pH = 4.0 Standard
pH = 7.0 Standard
pH = 10.0 Standard

Chain of Custody

P. Pike		ECS Fridge	
Relinquished by	Date/Time	Received by	Date/Time
ECS Fridge	--	--	--
Relinquished by	Date/Time	Received by	Date/Time

Well # **02567-MW3**

Well Diameter (D) 2.0 inch _____ or feet
conversion factor(C): 3.143*(D/2)^2
for a 2 inch well C= 0.163
for a 4 inch well C= 0.652
Total Well Depth (TWD) 13.98 ft.
Depth to GW(DGW) 5.85 ft.

Length of Water Column (LWC=TWD-DGW) 8.13 ft.

1Csg. Vol. (LWC*C)= 8.13 X 0.163 = 1.33 gal.
3Csg. Volume = 3x 1.33 = 3.98 gals.(Std. Purge Vol)

Total Vol. of Water Purged Before Sampling 3.99 gal.

	Initial	1st vol.	2nd vol.	3rd vol.	4th vol.	5th vol.	Post	Sampling
Volume Purged (gallons)		1.33	1.33	1.33				
Time (military)	8:52	8:55	8:58	9:01				9:10
pH (s.u.)	5.66	5.77	5.72	5.52				5.73
O.R.P. (mV)	72	56	50	44				37
Temperature (°C)	21.08	21.44	21.45	21.48				21.50
Specific Cond. (mS/cm)	0.900	0.485	0.414	0.346				0.341
Dissolved Oxygen (mg/L)	1.95	1.78	1.71	1.66				1.76
Turbidity (NTU)	>999	>999	>999	>999				>99

Remarks Well purged and sampled with new disposable poly - bailer.

APPENDIX E

LABORATORY REPORTS – SOIL AND GROUNDWATER SAMPLES

Pace Analytical®
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Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

April 27, 2012

Mr. Michael Clea
Environmental Compliance Servi
13504 South Point Blvd
Charlotte, NC 28273

RE: Project: RHODES WAY NORTH
Pace Project No.: 92116719

Dear Mr. Clea:
Enclosed are the analytical results for sample(s) received by the laboratory on April 18, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Kevin Herring

kevin.herring@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
South Carolina Drinking Water Cert. #: 99006003
Virginia Drinking Water Certification #: 00213
Connecticut Certification #: PH-0104
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Louisiana DHH Drinking Water # LA 100031
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460144

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia Certification #: 00072
West Virginia Certification #: 356
Virgina/VELAP Certification #: 460147

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Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92116719001	**MW-2**	Water	04/17/12 11:00	04/18/12 16:38
92116719002	**FIELD BLANK**	Water	04/17/12 10:25	04/18/12 16:38
92116719003	**SW-1**	Water	04/17/12 11:35	04/18/12 16:38
92116719004	**SW-2**	Water	04/17/12 11:45	04/18/12 16:38
92116719005	**TRIP BLANK**	Water	04/17/12 00:00	04/18/12 16:38
92116719006	**SB-1-5**	Solid	04/16/12 13:00	04/18/12 16:35
92116719007	**SB-2-5**	Solid	04/16/12 13:15	04/18/12 16:35
92116719008	**SB-3-4**	Solid	04/16/12 13:35	04/18/12 16:35
92116719009	**SB-5-4**	Solid	04/16/12 13:45	04/18/12 16:35
92116719010	**SB-6-4**	Solid	04/16/12 14:00	04/18/12 16:35
92116719011	**SB-7-4**	Solid	04/16/12 14:10	04/18/12 16:35
92116719012	**DUPLICATE**	Solid	04/16/12 00:00	04/18/12 16:35
92116719013	**SB-4-4**	Solid	04/16/12 13:25	04/18/12 16:35
92116719014	**SB-8-4**	Solid	04/16/12 14:25	04/18/12 16:35
92116719015	**TRIP BLANK**	Water	04/16/12 00:00	04/18/12 16:35
92116719016	**MW-1**	Water	04/17/12 09:55	04/18/12 16:35
92116719017	**MW-3**	Water	04/17/12 09:10	04/18/12 16:35
92116719018	**DUPLICATE**	Water	04/17/12 00:00	04/18/12 16:35
92116719019	**FIEL BLANK**	Water	04/16/12 18:45	04/18/12 17:41

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SAMPLE ANALYTE COUNT

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92116719001	**MW-2**	EPA 8011	MEJ	2	PASI-C
		EPA 6010	JDA	1	PASI-A
		EPA 6010	JMW	1	PASI-A
		EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	20	PASI-C
92116719002	**FIELD BLANK**	EPA 8011	MEJ	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 6010	JMW	27	PASI-A
		EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	20	PASI-C
92116719003	**SW-1**	EPA 8260	KJM	11	PASI-C
92116719004	**SW-2**	EPA 8260	KJM	11	PASI-C
92116719005	**TRIP BLANK**	EPA 8260	KJM	11	PASI-C
92116719006	**SB-1-5**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719007	**SB-2-5**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719008	**SB-3-4**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719009	**SB-5-4**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719010	**SB-6-4**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719011	**SB-7-4**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719012	**DUPLICATE**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92116719013	**SB-4-4**	EPA 8270 by SIM	PPM	21	PASI-C
		EPA 8260	DLK	11	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

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SAMPLE ANALYTE COUNT

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92116719015	**TRIP BLANK**	EPA 8260	KJM	11	PASI-C
92116719016	**MW-1**	EPA 8011	MEJ	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 6010	JMW	1	PASI-A
		EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	20	PASI-C
92116719017	**MW-3**	EPA 8011	MEJ	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 6010	JMW	1	PASI-A
		EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	20	PASI-C
92116719018	**DUPLICATE**	EPA 8011	MEJ	2	PASI-C
		EPA 6010	JMW	1	PASI-A
		EPA 6010	JMW	1	PASI-A
		EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	20	PASI-C
92116719019	**FIEL BLANK**	EPA 8270	PPM	21	PASI-C
		EPA 8260	KJM	11	PASI-C

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: MW-2 **Lab ID: 92116719001** Collected: 04/17/12 11:00 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.021	0.021	1	04/25/12 17:34	04/26/12 05:29	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	96	%	60-140		1	04/25/12 17:34	04/26/12 05:29	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**158**	ug/L	5.0	4.0	1	04/20/12 12:30	04/21/12 23:15	7439-92-1	
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead, Dissolved	ND	ug/L	5.0	4.0	1	04/25/12 15:15	04/25/12 18:40	7439-92-1	
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	12.5	0.60	1	04/19/12 10:00	04/20/12 14:10	83-32-9	
Acenaphthylene	ND	ug/L	12.5	0.58	1	04/19/12 10:00	04/20/12 14:10	208-96-8	
Anthracene	ND	ug/L	12.5	0.80	1	04/19/12 10:00	04/20/12 14:10	120-12-7	
Benzo(a)anthracene	ND	ug/L	12.5	0.89	1	04/19/12 10:00	04/20/12 14:10	56-55-3	
Benzo(a)pyrene	ND	ug/L	12.5	0.78	1	04/19/12 10:00	04/20/12 14:10	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	12.5	0.71	1	04/19/12 10:00	04/20/12 14:10	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	12.5	0.85	1	04/19/12 10:00	04/20/12 14:10	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	12.5	0.82	1	04/19/12 10:00	04/20/12 14:10	207-08-9	
Chrysene	ND	ug/L	12.5	0.88	1	04/19/12 10:00	04/20/12 14:10	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	12.5	0.71	1	04/19/12 10:00	04/20/12 14:10	53-70-3	
Fluoranthene	ND	ug/L	12.5	0.90	1	04/19/12 10:00	04/20/12 14:10	206-44-0	
Fluorene	ND	ug/L	12.5	0.80	1	04/19/12 10:00	04/20/12 14:10	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	12.5	0.72	1	04/19/12 10:00	04/20/12 14:10	193-39-5	
1-Methylnaphthalene	ND	ug/L	12.5	12.5	1	04/19/12 10:00	04/20/12 14:10	90-12-0	
2-Methylnaphthalene	ND	ug/L	12.5	0.39	1	04/19/12 10:00	04/20/12 14:10	91-57-6	
Naphthalene	ND	ug/L	12.5	0.54	1	04/19/12 10:00	04/20/12 14:10	91-20-3	
Phenanthrene	ND	ug/L	12.5	0.85	1	04/19/12 10:00	04/20/12 14:10	85-01-8	
Pyrene	ND	ug/L	12.5	0.82	1	04/19/12 10:00	04/20/12 14:10	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	62	%	10-120		1	04/19/12 10:00	04/20/12 14:10	4165-60-0	
2-Fluorobiphenyl (S)	58	%	10-120		1	04/19/12 10:00	04/20/12 14:10	321-60-8	
Terphenyl-d14 (S)	66	%	10-116		1	04/19/12 10:00	04/20/12 14:10	1718-51-0	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		04/20/12 00:50	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		04/20/12 00:50	994-05-8	
Benzene	**3.7J**	ug/L	5.0	1.7	1		04/20/12 00:50	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		04/20/12 00:50	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		04/20/12 00:50	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		04/20/12 00:50	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		04/20/12 00:50	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		04/20/12 00:50	108-20-3	
Ethanol	ND	ug/L	200	138	1		04/20/12 00:50	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/20/12 00:50	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		04/20/12 00:50	637-92-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: MW-2 **Lab ID: 92116719001** Collected: 04/17/12 11:00 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Methyl-tert-butyl ether	**4.0J**	ug/L	5.0	1.7	1		04/20/12 00:50	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/20/12 00:50	91-20-3	
Toluene	**5.0J**	ug/L	5.0	1.6	1		04/20/12 00:50	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/20/12 00:50	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/20/12 00:50	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	104	%	70-130		1		04/20/12 00:50	460-00-4	
Dibromofluoromethane (S)	101	%	70-130		1		04/20/12 00:50	1868-53-7	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		04/20/12 00:50	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		04/20/12 00:50	2037-26-5	

Sample: FIELD BLANK **Lab ID: 92116719002** Collected: 04/17/12 10:25 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	04/25/12 17:35	04/26/12 05:49	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	99	%	60-140		1	04/25/12 17:35	04/26/12 05:49	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	ND	ug/L	5.0	4.0	1	04/21/12 10:35	04/22/12 15:16	7439-92-1	
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Aluminum, Dissolved	ND	ug/L	100	25.0	1	04/25/12 15:15	04/25/12 18:46	7429-90-5	
Antimony, Dissolved	**2.9J**	ug/L	5.0	2.6	1	04/25/12 15:15	04/25/12 18:46	7440-36-0	
Arsenic, Dissolved	ND	ug/L	5.0	2.7	1	04/25/12 15:15	04/25/12 18:46	7440-38-2	
Barium, Dissolved	**0.51J**	ug/L	5.0	0.20	1	04/25/12 15:15	04/25/12 18:46	7440-39-3	
Beryllium, Dissolved	**0.19J**	ug/L	1.0	0.10	1	04/25/12 15:15	04/25/12 18:46	7440-41-7	
Boron, Dissolved	**5.3J**	ug/L	50.0	4.7	1	04/25/12 15:15	04/25/12 18:46	7440-42-8	
Cadmium, Dissolved	ND	ug/L	1.0	0.50	1	04/25/12 15:15	04/25/12 18:46	7440-43-9	
Calcium, Dissolved	**27.3J**	ug/L	100	27.0	1	04/25/12 15:15	04/25/12 18:46	7440-70-2	
Chromium, Dissolved	ND	ug/L	5.0	0.40	1	04/25/12 15:15	04/25/12 18:46	7440-47-3	
Cobalt, Dissolved	ND	ug/L	5.0	0.60	1	04/25/12 15:15	04/25/12 18:46	7440-48-4	
Copper, Dissolved	**0.37J**	ug/L	5.0	0.30	1	04/25/12 15:15	04/25/12 18:46	7440-50-8	
Iron, Dissolved	ND	ug/L	50.0	14.0	1	04/25/12 15:15	04/25/12 18:46	7439-89-6	
Lead, Dissolved	ND	ug/L	5.0	4.0	1	04/25/12 15:15	04/25/12 18:46	7439-92-1	
Magnesium, Dissolved	**6.4J**	ug/L	100	3.0	1	04/25/12 15:15	04/25/12 18:46	7439-95-4	
Manganese, Dissolved	**0.51J**	ug/L	5.0	0.30	1	04/25/12 15:15	04/25/12 18:46	7439-96-5	
Molybdenum, Dissolved	**1.6J**	ug/L	5.0	1.1	1	04/25/12 15:15	04/25/12 18:46	7439-98-7	
Nickel, Dissolved	ND	ug/L	5.0	1.7	1	04/25/12 15:15	04/25/12 18:46	7440-02-0	
Potassium, Dissolved	**19.0J**	ug/L	5000	3.0	1	04/25/12 15:15	04/25/12 18:46	7440-09-7	
Selenium, Dissolved	ND	ug/L	10.0	3.8	1	04/25/12 15:15	04/25/12 18:46	7782-49-2	
Silicon, Dissolved	**8.9J**	ug/L	100	2.3	1	04/25/12 15:15	04/25/12 18:46	7440-21-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: FIELD BLANK **Lab ID: 92116719002** Collected: 04/17/12 10:25 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Sodium, Dissolved	**177J**	ug/L	5000	2.5	1	04/25/12 15:15	04/25/12 18:46	7440-23-5	
Strontium, Dissolved	**0.33J**	ug/L	5.0	0.010	1	04/25/12 15:15	04/25/12 18:46	7440-24-6	
Thallium, Dissolved	**5.0J**	ug/L	10.0	3.0	1	04/25/12 15:15	04/25/12 18:46	7440-28-0	
Tin, Dissolved	ND	ug/L	5.0	1.8	1	04/25/12 15:15	04/25/12 18:46	7440-31-5	
Titanium, Dissolved	**0.70J**	ug/L	5.0	0.10	1	04/25/12 15:15	04/25/12 18:46	7440-32-6	
Vanadium, Dissolved	**0.40J**	ug/L	5.0	0.20	1	04/25/12 15:15	04/25/12 18:46	7440-62-2	
Zinc, Dissolved	**3.2J**	ug/L	10.0	0.40	1	04/25/12 15:15	04/25/12 18:46	7440-66-6	
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	11.1	0.53	1	04/19/12 10:00	04/20/12 14:38	83-32-9	
Acenaphthylene	ND	ug/L	11.1	0.51	1	04/19/12 10:00	04/20/12 14:38	208-96-8	
Anthracene	ND	ug/L	11.1	0.71	1	04/19/12 10:00	04/20/12 14:38	120-12-7	
Benzo(a)anthracene	ND	ug/L	11.1	0.79	1	04/19/12 10:00	04/20/12 14:38	56-55-3	
Benzo(a)pyrene	ND	ug/L	11.1	0.69	1	04/19/12 10:00	04/20/12 14:38	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	11.1	0.63	1	04/19/12 10:00	04/20/12 14:38	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	11.1	0.76	1	04/19/12 10:00	04/20/12 14:38	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	11.1	0.73	1	04/19/12 10:00	04/20/12 14:38	207-08-9	
Chrysene	**1.2J**	ug/L	11.1	0.78	1	04/19/12 10:00	04/20/12 14:38	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	11.1	0.63	1	04/19/12 10:00	04/20/12 14:38	53-70-3	
Fluoranthene	ND	ug/L	11.1	0.80	1	04/19/12 10:00	04/20/12 14:38	206-44-0	
Fluorene	ND	ug/L	11.1	0.71	1	04/19/12 10:00	04/20/12 14:38	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	11.1	0.64	1	04/19/12 10:00	04/20/12 14:38	193-39-5	
1-Methylnaphthalene	ND	ug/L	11.1	11.1	1	04/19/12 10:00	04/20/12 14:38	90-12-0	
2-Methylnaphthalene	ND	ug/L	11.1	0.34	1	04/19/12 10:00	04/20/12 14:38	91-57-6	
Naphthalene	ND	ug/L	11.1	0.48	1	04/19/12 10:00	04/20/12 14:38	91-20-3	
Phenanthrene	ND	ug/L	11.1	0.76	1	04/19/12 10:00	04/20/12 14:38	85-01-8	
Pyrene	ND	ug/L	11.1	0.73	1	04/19/12 10:00	04/20/12 14:38	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	62	%	10-120		1	04/19/12 10:00	04/20/12 14:38	4165-60-0	
2-Fluorobiphenyl (S)	59	%	10-120		1	04/19/12 10:00	04/20/12 14:38	321-60-8	
Terphenyl-d14 (S)	64	%	10-116		1	04/19/12 10:00	04/20/12 14:38	1718-51-0	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		04/19/12 22:41	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		04/19/12 22:41	994-05-8	
Benzene	ND	ug/L	5.0	1.7	1		04/19/12 22:41	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		04/19/12 22:41	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		04/19/12 22:41	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		04/19/12 22:41	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		04/19/12 22:41	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		04/19/12 22:41	108-20-3	
Ethanol	ND	ug/L	200	138	1		04/19/12 22:41	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/19/12 22:41	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		04/19/12 22:41	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/19/12 22:41	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/19/12 22:41	91-20-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: FIELD BLANK **Lab ID: 92116719002** Collected: 04/17/12 10:25 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Toluene	ND	ug/L	5.0	1.6	1		04/19/12 22:41	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/19/12 22:41	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/19/12 22:41	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		04/19/12 22:41	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		1		04/19/12 22:41	1868-53-7	
1,2-Dichloroethane-d4 (S)	103	%	70-130		1		04/19/12 22:41	17060-07-0	
Toluene-d8 (S)	96	%	70-130		1		04/19/12 22:41	2037-26-5	

Sample: SW-1 **Lab ID: 92116719003** Collected: 04/17/12 11:35 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.7	1		04/20/12 01:08	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/20/12 01:08	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/20/12 01:08	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/20/12 01:08	91-20-3	
Toluene	**2.6J**	ug/L	5.0	1.6	1		04/20/12 01:08	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/20/12 01:08	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/20/12 01:08	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	103	%	70-130		1		04/20/12 01:08	460-00-4	
Dibromofluoromethane (S)	103	%	70-130		1		04/20/12 01:08	1868-53-7	
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		04/20/12 01:08	17060-07-0	
Toluene-d8 (S)	97	%	70-130		1		04/20/12 01:08	2037-26-5	

Sample: SW-2 **Lab ID: 92116719004** Collected: 04/17/12 11:45 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.7	1		04/20/12 01:27	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/20/12 01:27	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/20/12 01:27	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/20/12 01:27	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		04/20/12 01:27	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/20/12 01:27	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/20/12 01:27	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		04/20/12 01:27	460-00-4	
Dibromofluoromethane (S)	106	%	70-130		1		04/20/12 01:27	1868-53-7	
1,2-Dichloroethane-d4 (S)	112	%	70-130		1		04/20/12 01:27	17060-07-0	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SW-2 **Lab ID: 92116719004** Collected: 04/17/12 11:45 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Surrogates									
Toluene-d8 (S)	97	%	70-130		1		04/20/12 01:27	2037-26-5	

Sample: TRIP BLANK **Lab ID: 92116719005** Collected: 04/17/12 00:00 Received: 04/18/12 16:38 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.7	1		04/19/12 22:59	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/19/12 22:59	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/19/12 22:59	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/19/12 22:59	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		04/19/12 22:59	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/19/12 22:59	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/19/12 22:59	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		04/19/12 22:59	460-00-4	
Dibromofluoromethane (S)	102	%	70-130		1		04/19/12 22:59	1868-53-7	
1,2-Dichloroethane-d4 (S)	104	%	70-130		1		04/19/12 22:59	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		04/19/12 22:59	2037-26-5	

Sample: SB-1-5 **Lab ID: 92116719006** Collected: 04/16/12 13:00 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	1110	166	100	04/19/12 09:14	04/23/12 09:54	83-32-9	
Acenaphthylene	ND	ug/kg	1110	144	100	04/19/12 09:14	04/23/12 09:54	208-96-8	
Anthracene	**472J**	ug/kg	1110	155	100	04/19/12 09:14	04/23/12 09:54	120-12-7	
Benzo(a)anthracene	ND	ug/kg	1110	78.7	100	04/19/12 09:14	04/23/12 09:54	56-55-3	
Benzo(a)pyrene	ND	ug/kg	1110	122	100	04/19/12 09:14	04/23/12 09:54	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	1110	74.2	100	04/19/12 09:14	04/23/12 09:54	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	1110	288	100	04/19/12 09:14	04/23/12 09:54	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	1110	166	100	04/19/12 09:14	04/23/12 09:54	207-08-9	
Chrysene	ND	ug/kg	1110	199	100	04/19/12 09:14	04/23/12 09:54	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1110	199	100	04/19/12 09:14	04/23/12 09:54	53-70-3	
Fluoranthene	ND	ug/kg	1110	92.0	100	04/19/12 09:14	04/23/12 09:54	206-44-0	
Fluorene	**1590**	ug/kg	1110	177	100	04/19/12 09:14	04/23/12 09:54	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1110	310	100	04/19/12 09:14	04/23/12 09:54	193-39-5	
1-Methylnaphthalene	**19300**	ug/kg	1110	133	100	04/19/12 09:14	04/23/12 09:54	90-12-0	
2-Methylnaphthalene	**36800**	ug/kg	1110	122	100	04/19/12 09:14	04/23/12 09:54	91-57-6	
Naphthalene	**25800**	ug/kg	1110	255	100	04/19/12 09:14	04/23/12 09:54	91-20-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-1-5 **Lab ID: 92116719006** Collected: 04/16/12 13:00 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Phenanthrene	**3330**	ug/kg	1110	166	100	04/19/12 09:14	04/23/12 09:54	85-01-8	
Pyrene	**438J**	ug/kg	1110	199	100	04/19/12 09:14	04/23/12 09:54	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		100	04/19/12 09:14	04/23/12 09:54	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		100	04/19/12 09:14	04/23/12 09:54	321-60-8	
Terphenyl-d14 (S)	0	%	39-119		100	04/19/12 09:14	04/23/12 09:54	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**1130**	ug/kg	965	309	200		04/20/12 17:48	71-43-2	
Ethylbenzene	**35200**	ug/kg	965	347	200		04/20/12 17:48	100-41-4	
Methyl-tert-butyl ether	**479J**	ug/kg	965	290	200		04/20/12 17:48	1634-04-4	
Naphthalene	**36700**	ug/kg	965	232	200		04/20/12 17:48	91-20-3	
Toluene	**8420**	ug/kg	965	347	200		04/20/12 17:48	108-88-3	
m&p-Xylene	**18800**	ug/kg	1930	695	200		04/20/12 17:48	179601-23-1	
o-Xylene	**5580**	ug/kg	965	367	200		04/20/12 17:48	95-47-6	
Surrogates									
Dibromofluoromethane (S)	94	%	70-130		200		04/20/12 17:48	1868-53-7	
Toluene-d8 (S)	99	%	70-130		200		04/20/12 17:48	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		200		04/20/12 17:48	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	70-132		200		04/20/12 17:48	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**9.7**	%	0.10	0.10	1		04/19/12 12:44		

Sample: SB-2-5 **Lab ID: 92116719007** Collected: 04/16/12 13:15 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	1170	176	100	04/19/12 09:14	04/23/12 10:14	83-32-9	
Acenaphthylene	ND	ug/kg	1170	152	100	04/19/12 09:14	04/23/12 10:14	208-96-8	
Anthracene	ND	ug/kg	1170	164	100	04/19/12 09:14	04/23/12 10:14	120-12-7	
Benzo(a)anthracene	ND	ug/kg	1170	83.2	100	04/19/12 09:14	04/23/12 10:14	56-55-3	
Benzo(a)pyrene	ND	ug/kg	1170	129	100	04/19/12 09:14	04/23/12 10:14	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	1170	78.5	100	04/19/12 09:14	04/23/12 10:14	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	1170	305	100	04/19/12 09:14	04/23/12 10:14	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	1170	176	100	04/19/12 09:14	04/23/12 10:14	207-08-9	
Chrysene	ND	ug/kg	1170	211	100	04/19/12 09:14	04/23/12 10:14	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	1170	211	100	04/19/12 09:14	04/23/12 10:14	53-70-3	
Fluoranthene	ND	ug/kg	1170	97.3	100	04/19/12 09:14	04/23/12 10:14	206-44-0	
Fluorene	**1080J**	ug/kg	1170	188	100	04/19/12 09:14	04/23/12 10:14	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	1170	328	100	04/19/12 09:14	04/23/12 10:14	193-39-5	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-2-5 **Lab ID: 92116719007** Collected: 04/16/12 13:15 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
1-Methylnaphthalene	**13800**	ug/kg	1170	141	100	04/19/12 09:14	04/23/12 10:14	90-12-0	
2-Methylnaphthalene	**27100**	ug/kg	1170	129	100	04/19/12 09:14	04/23/12 10:14	91-57-6	
Naphthalene	**22100**	ug/kg	1170	270	100	04/19/12 09:14	04/23/12 10:14	91-20-3	
Phenanthrene	**1820**	ug/kg	1170	176	100	04/19/12 09:14	04/23/12 10:14	85-01-8	
Pyrene	**355J**	ug/kg	1170	211	100	04/19/12 09:14	04/23/12 10:14	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		100	04/19/12 09:14	04/23/12 10:14	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		100	04/19/12 09:14	04/23/12 10:14	321-60-8	
Terphenyl-d14 (S)	0	%	39-119		100	04/19/12 09:14	04/23/12 10:14	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**4000**	ug/kg	1070	344	250		04/20/12 18:06	71-43-2	
Ethylbenzene	**28600**	ug/kg	1070	387	250		04/20/12 18:06	100-41-4	
Methyl-tert-butyl ether	**2210**	ug/kg	1070	322	250		04/20/12 18:06	1634-04-4	
Naphthalene	**19600**	ug/kg	1070	258	250		04/20/12 18:06	91-20-3	
Toluene	**49000**	ug/kg	2150	774	500		04/23/12 16:44	108-88-3	
m&p-Xylene	**110000**	ug/kg	4300	1550	500		04/23/12 16:44	179601-23-1	
o-Xylene	**46400**	ug/kg	2150	817	500		04/23/12 16:44	95-47-6	
Surrogates									
Dibromofluoromethane (S)	97	%	70-130		250		04/20/12 18:06	1868-53-7	
Toluene-d8 (S)	101	%	70-130		250		04/20/12 18:06	2037-26-5	
4-Bromofluorobenzene (S)	103	%	70-130		250		04/20/12 18:06	460-00-4	
1,2-Dichloroethane-d4 (S)	107	%	70-132		250		04/20/12 18:06	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**14.7**	%	0.10	0.10	1		04/19/12 12:44		

Sample: SB-3-4 **Lab ID: 92116719008** Collected: 04/16/12 13:35 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	11.4	1.7	1	04/19/12 09:14	04/23/12 08:33	83-32-9	
Acenaphthylene	ND	ug/kg	11.4	1.5	1	04/19/12 09:14	04/23/12 08:33	208-96-8	
Anthracene	**2.1J**	ug/kg	11.4	1.6	1	04/19/12 09:14	04/23/12 08:33	120-12-7	
Benzo(a)anthracene	ND	ug/kg	11.4	0.81	1	04/19/12 09:14	04/23/12 08:33	56-55-3	
Benzo(a)pyrene	ND	ug/kg	11.4	1.3	1	04/19/12 09:14	04/23/12 08:33	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	11.4	0.76	1	04/19/12 09:14	04/23/12 08:33	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	11.4	3.0	1	04/19/12 09:14	04/23/12 08:33	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	11.4	1.7	1	04/19/12 09:14	04/23/12 08:33	207-08-9	
Chrysene	ND	ug/kg	11.4	2.0	1	04/19/12 09:14	04/23/12 08:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	11.4	2.0	1	04/19/12 09:14	04/23/12 08:33	53-70-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-3-4 **Lab ID: 92116719008** Collected: 04/16/12 13:35 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Fluoranthene	**2.5J**	ug/kg	11.4	0.94	1	04/19/12 09:14	04/23/12 08:33	206-44-0	
Fluorene	**9.8J**	ug/kg	11.4	1.8	1	04/19/12 09:14	04/23/12 08:33	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	11.4	3.2	1	04/19/12 09:14	04/23/12 08:33	193-39-5	
1-Methylnaphthalene	**164**	ug/kg	11.4	1.4	1	04/19/12 09:14	04/23/12 08:33	90-12-0	
2-Methylnaphthalene	**318**	ug/kg	11.4	1.3	1	04/19/12 09:14	04/23/12 08:33	91-57-6	
Naphthalene	**302**	ug/kg	11.4	2.6	1	04/19/12 09:14	04/23/12 08:33	91-20-3	
Phenanthrene	**19.2**	ug/kg	11.4	1.7	1	04/19/12 09:14	04/23/12 08:33	85-01-8	
Pyrene	**4.1J**	ug/kg	11.4	2.0	1	04/19/12 09:14	04/23/12 08:33	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	74	%	10-128		1	04/19/12 09:14	04/23/12 08:33	4165-60-0	
2-Fluorobiphenyl (S)	74	%	10-110		1	04/19/12 09:14	04/23/12 08:33	321-60-8	
Terphenyl-d14 (S)	97	%	39-119		1	04/19/12 09:14	04/23/12 08:33	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**285J**	ug/kg	488	156	100		04/20/12 18:24	71-43-2	
Ethylbenzene	**264J**	ug/kg	488	176	100		04/20/12 18:24	100-41-4	
Methyl-tert-butyl ether	**9310**	ug/kg	488	146	100		04/20/12 18:24	1634-04-4	
Naphthalene	**733**	ug/kg	488	117	100		04/20/12 18:24	91-20-3	
Toluene	**786**	ug/kg	488	176	100		04/20/12 18:24	108-88-3	
m&p-Xylene	**927J**	ug/kg	976	351	100		04/20/12 18:24	179601-23-1	
o-Xylene	**395J**	ug/kg	488	185	100		04/20/12 18:24	95-47-6	
Surrogates									
Dibromofluoromethane (S)	93	%	70-130		100		04/20/12 18:24	1868-53-7	
Toluene-d8 (S)	102	%	70-130		100		04/20/12 18:24	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		100		04/20/12 18:24	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-132		100		04/20/12 18:24	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**12.1**	%	0.10	0.10	1		04/19/12 12:44		

Sample: SB-5-4 **Lab ID: 92116719009** Collected: 04/16/12 13:45 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	10.9	1.6	1	04/19/12 09:14	04/23/12 08:53	83-32-9	
Acenaphthylene	ND	ug/kg	10.9	1.4	1	04/19/12 09:14	04/23/12 08:53	208-96-8	
Anthracene	ND	ug/kg	10.9	1.5	1	04/19/12 09:14	04/23/12 08:53	120-12-7	
Benzo(a)anthracene	ND	ug/kg	10.9	0.77	1	04/19/12 09:14	04/23/12 08:53	56-55-3	
Benzo(a)pyrene	ND	ug/kg	10.9	1.2	1	04/19/12 09:14	04/23/12 08:53	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	10.9	0.73	1	04/19/12 09:14	04/23/12 08:53	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	10.9	2.8	1	04/19/12 09:14	04/23/12 08:53	191-24-2	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-5-4 **Lab ID: 92116719009** Collected: 04/16/12 13:45 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Benzo(k)fluoranthene	ND	ug/kg	10.9	1.6	1	04/19/12 09:14	04/23/12 08:53	207-08-9	
Chrysene	ND	ug/kg	10.9	2.0	1	04/19/12 09:14	04/23/12 08:53	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	10.9	2.0	1	04/19/12 09:14	04/23/12 08:53	53-70-3	
Fluoranthene	ND	ug/kg	10.9	0.90	1	04/19/12 09:14	04/23/12 08:53	206-44-0	
Fluorene	ND	ug/kg	10.9	1.7	1	04/19/12 09:14	04/23/12 08:53	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	10.9	3.1	1	04/19/12 09:14	04/23/12 08:53	193-39-5	
1-Methylnaphthalene	**94.7**	ug/kg	10.9	1.3	1	04/19/12 09:14	04/23/12 08:53	90-12-0	
2-Methylnaphthalene	**218**	ug/kg	10.9	1.2	1	04/19/12 09:14	04/23/12 08:53	91-57-6	
Naphthalene	**221**	ug/kg	10.9	2.5	1	04/19/12 09:14	04/23/12 08:53	91-20-3	
Phenanthrene	ND	ug/kg	10.9	1.6	1	04/19/12 09:14	04/23/12 08:53	85-01-8	
Pyrene	ND	ug/kg	10.9	2.0	1	04/19/12 09:14	04/23/12 08:53	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	71	%	10-128		1	04/19/12 09:14	04/23/12 08:53	4165-60-0	
2-Fluorobiphenyl (S)	61	%	10-110		1	04/19/12 09:14	04/23/12 08:53	321-60-8	
Terphenyl-d14 (S)	93	%	39-119		1	04/19/12 09:14	04/23/12 08:53	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**84.7J**	ug/kg	85.7	27.4	20		04/23/12 17:02	71-43-2	
Ethylbenzene	**137**	ug/kg	85.7	30.9	20		04/23/12 17:02	100-41-4	
Methyl-tert-butyl ether	**296**	ug/kg	85.7	25.7	20		04/23/12 17:02	1634-04-4	
Naphthalene	**311**	ug/kg	85.7	20.6	20		04/23/12 17:02	91-20-3	
Toluene	**408**	ug/kg	85.7	30.9	20		04/23/12 17:02	108-88-3	
m&p-Xylene	**492**	ug/kg	171	61.7	20		04/23/12 17:02	179601-23-1	
o-Xylene	**228**	ug/kg	85.7	32.6	20		04/23/12 17:02	95-47-6	
Surrogates									
Dibromofluoromethane (S)	110	%	70-130		20		04/23/12 17:02	1868-53-7	
Toluene-d8 (S)	100	%	70-130		20		04/23/12 17:02	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		20		04/23/12 17:02	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-132		20		04/23/12 17:02	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**9.1**	%	0.10	0.10	1		04/19/12 12:44		

Sample: SB-6-4 **Lab ID: 92116719010** Collected: 04/16/12 14:00 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	56.1	8.4	5	04/19/12 09:14	04/23/12 11:35	83-32-9	
Acenaphthylene	ND	ug/kg	56.1	7.3	5	04/19/12 09:14	04/23/12 11:35	208-96-8	
Anthracene	ND	ug/kg	56.1	7.9	5	04/19/12 09:14	04/23/12 11:35	120-12-7	
Benzo(a)anthracene	ND	ug/kg	56.1	4.0	5	04/19/12 09:14	04/23/12 11:35	56-55-3	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-6-4 **Lab ID: 92116719010** Collected: 04/16/12 14:00 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Benzo(a)pyrene	ND	ug/kg	56.1	6.2	5	04/19/12 09:14	04/23/12 11:35	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	56.1	3.8	5	04/19/12 09:14	04/23/12 11:35	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	56.1	14.6	5	04/19/12 09:14	04/23/12 11:35	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	56.1	8.4	5	04/19/12 09:14	04/23/12 11:35	207-08-9	
Chrysene	ND	ug/kg	56.1	10.1	5	04/19/12 09:14	04/23/12 11:35	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	56.1	10.1	5	04/19/12 09:14	04/23/12 11:35	53-70-3	
Fluoranthene	ND	ug/kg	56.1	4.7	5	04/19/12 09:14	04/23/12 11:35	206-44-0	
Fluorene	ND	ug/kg	56.1	9.0	5	04/19/12 09:14	04/23/12 11:35	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	56.1	15.7	5	04/19/12 09:14	04/23/12 11:35	193-39-5	
1-Methylnaphthalene	**213**	ug/kg	56.1	6.7	5	04/19/12 09:14	04/23/12 11:35	90-12-0	
2-Methylnaphthalene	**388**	ug/kg	56.1	6.2	5	04/19/12 09:14	04/23/12 11:35	91-57-6	
Naphthalene	**1590**	ug/kg	56.1	12.9	5	04/19/12 09:14	04/23/12 11:35	91-20-3	
Phenanthrene	ND	ug/kg	56.1	8.4	5	04/19/12 09:14	04/23/12 11:35	85-01-8	
Pyrene	ND	ug/kg	56.1	10.1	5	04/19/12 09:14	04/23/12 11:35	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	86	%	10-128		5	04/19/12 09:14	04/23/12 11:35	4165-60-0	D3
2-Fluorobiphenyl (S)	74	%	10-110		5	04/19/12 09:14	04/23/12 11:35	321-60-8	
Terphenyl-d14 (S)	97	%	39-119		5	04/19/12 09:14	04/23/12 11:35	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**2410J**	ug/kg	2750	879	500		04/23/12 17:20	71-43-2	
Ethylbenzene	**3160**	ug/kg	2750	989	500		04/23/12 17:20	100-41-4	
Methyl-tert-butyl ether	**7910**	ug/kg	2750	824	500		04/23/12 17:20	1634-04-4	
Naphthalene	**2290J**	ug/kg	2750	659	500		04/23/12 17:20	91-20-3	
Toluene	**10400**	ug/kg	2750	989	500		04/23/12 17:20	108-88-3	
m&p-Xylene	**11600**	ug/kg	5490	1980	500		04/23/12 17:20	179601-23-1	
o-Xylene	**5470**	ug/kg	2750	1040	500		04/23/12 17:20	95-47-6	
Surrogates									
Dibromofluoromethane (S)	99	%	70-130		1		04/20/12 19:19	1868-53-7	
Toluene-d8 (S)	93	%	70-130		1		04/20/12 19:19	2037-26-5	
4-Bromofluorobenzene (S)	85	%	70-130		1		04/20/12 19:19	460-00-4	
1,2-Dichloroethane-d4 (S)	143	%	70-132		1		04/20/12 19:19	17060-07-0	S2
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**10.9**	%	0.10	0.10	1		04/19/12 12:44		

Sample: SB-7-4 **Lab ID: 92116719011** Collected: 04/16/12 14:10 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	227	34.0	20	04/19/12 09:14	04/23/12 11:15	83-32-9	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-7-4 **Lab ID: 92116719011** Collected: 04/16/12 14:10 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthylene	ND	ug/kg	227	29.5	20	04/19/12 09:14	04/23/12 11:15	208-96-8	
Anthracene	ND	ug/kg	227	31.8	20	04/19/12 09:14	04/23/12 11:15	120-12-7	
Benzo(a)anthracene	ND	ug/kg	227	16.1	20	04/19/12 09:14	04/23/12 11:15	56-55-3	
Benzo(a)pyrene	ND	ug/kg	227	25.0	20	04/19/12 09:14	04/23/12 11:15	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	227	15.2	20	04/19/12 09:14	04/23/12 11:15	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	227	59.0	20	04/19/12 09:14	04/23/12 11:15	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	227	34.0	20	04/19/12 09:14	04/23/12 11:15	207-08-9	
Chrysene	ND	ug/kg	227	40.9	20	04/19/12 09:14	04/23/12 11:15	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	227	40.9	20	04/19/12 09:14	04/23/12 11:15	53-70-3	
Fluoranthene	ND	ug/kg	227	18.8	20	04/19/12 09:14	04/23/12 11:15	206-44-0	
Fluorene	**49.0J**	ug/kg	227	36.3	20	04/19/12 09:14	04/23/12 11:15	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	227	63.6	20	04/19/12 09:14	04/23/12 11:15	193-39-5	
1-Methylnaphthalene	**4640**	ug/kg	227	27.2	20	04/19/12 09:14	04/23/12 11:15	90-12-0	
2-Methylnaphthalene	**9380**	ug/kg	227	25.0	20	04/19/12 09:14	04/23/12 11:15	91-57-6	
Naphthalene	**8610**	ug/kg	227	52.2	20	04/19/12 09:14	04/23/12 11:15	91-20-3	
Phenanthrene	**58.1J**	ug/kg	227	34.0	20	04/19/12 09:14	04/23/12 11:15	85-01-8	
Pyrene	ND	ug/kg	227	40.9	20	04/19/12 09:14	04/23/12 11:15	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		20	04/19/12 09:14	04/23/12 11:15	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		20	04/19/12 09:14	04/23/12 11:15	321-60-8	
Terphenyl-d14 (S)	0	%	39-119		20	04/19/12 09:14	04/23/12 11:15	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**463J**	ug/kg	480	154	100		04/20/12 19:01	71-43-2	
Ethylbenzene	**4020**	ug/kg	480	173	100		04/20/12 19:01	100-41-4	
Methyl-tert-butyl ether	**5470**	ug/kg	480	144	100		04/20/12 19:01	1634-04-4	
Naphthalene	**14600**	ug/kg	480	115	100		04/20/12 19:01	91-20-3	
Toluene	**5010**	ug/kg	480	173	100		04/20/12 19:01	108-88-3	
m&p-Xylene	**15500**	ug/kg	960	346	100		04/20/12 19:01	179601-23-1	
o-Xylene	**8520**	ug/kg	480	182	100		04/20/12 19:01	95-47-6	
Surrogates									
Dibromofluoromethane (S)	94	%	70-130		100		04/20/12 19:01	1868-53-7	
Toluene-d8 (S)	103	%	70-130		100		04/20/12 19:01	2037-26-5	
4-Bromofluorobenzene (S)	101	%	70-130		100		04/20/12 19:01	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-132		100		04/20/12 19:01	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.0**	%	0.10	0.10	1		04/19/12 12:45		

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: DUPLICATE **Lab ID: 92116719012** Collected: 04/16/12 00:00 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	532	79.8	50	04/19/12 09:14	04/23/12 10:55	83-32-9	
Acenaphthylene	ND	ug/kg	532	69.2	50	04/19/12 09:14	04/23/12 10:55	208-96-8	
Anthracene	ND	ug/kg	532	74.5	50	04/19/12 09:14	04/23/12 10:55	120-12-7	
Benzo(a)anthracene	ND	ug/kg	532	37.8	50	04/19/12 09:14	04/23/12 10:55	56-55-3	
Benzo(a)pyrene	ND	ug/kg	532	58.6	50	04/19/12 09:14	04/23/12 10:55	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	532	35.7	50	04/19/12 09:14	04/23/12 10:55	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	532	138	50	04/19/12 09:14	04/23/12 10:55	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	532	79.8	50	04/19/12 09:14	04/23/12 10:55	207-08-9	
Chrysene	ND	ug/kg	532	95.8	50	04/19/12 09:14	04/23/12 10:55	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	532	95.8	50	04/19/12 09:14	04/23/12 10:55	53-70-3	
Fluoranthene	ND	ug/kg	532	44.2	50	04/19/12 09:14	04/23/12 10:55	206-44-0	
Fluorene	**765**	ug/kg	532	85.2	50	04/19/12 09:14	04/23/12 10:55	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	532	149	50	04/19/12 09:14	04/23/12 10:55	193-39-5	
1-Methylnaphthalene	**9060**	ug/kg	532	63.9	50	04/19/12 09:14	04/23/12 10:55	90-12-0	
2-Methylnaphthalene	**17700**	ug/kg	532	58.6	50	04/19/12 09:14	04/23/12 10:55	91-57-6	
Naphthalene	**14600**	ug/kg	532	122	50	04/19/12 09:14	04/23/12 10:55	91-20-3	
Phenanthrene	**1280**	ug/kg	532	79.8	50	04/19/12 09:14	04/23/12 10:55	85-01-8	
Pyrene	**237J**	ug/kg	532	95.8	50	04/19/12 09:14	04/23/12 10:55	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		50	04/19/12 09:14	04/23/12 10:55	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		50	04/19/12 09:14	04/23/12 10:55	321-60-8	
Terphenyl-d14 (S)	0	%	39-119		50	04/19/12 09:14	04/23/12 10:55	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**5810**	ug/kg	3570	1140	1000		04/23/12 17:38	71-43-2	
Ethylbenzene	**26800**	ug/kg	3570	1290	1000		04/23/12 17:38	100-41-4	
Methyl-tert-butyl ether	**2070**	ug/kg	3.6	1.1	1		04/20/12 17:30	1634-04-4	
Naphthalene	**15500**	ug/kg	3570	857	1000		04/23/12 17:38	91-20-3	
Toluene	**52700**	ug/kg	3570	1290	1000		04/23/12 17:38	108-88-3	
m&p-Xylene	**98700**	ug/kg	7140	2570	1000		04/23/12 17:38	179601-23-1	
o-Xylene	**40600**	ug/kg	3570	1360	1000		04/23/12 17:38	95-47-6	
Surrogates									
Dibromofluoromethane (S)	104	%	70-130		1		04/20/12 17:30	1868-53-7	
Toluene-d8 (S)	20	%	70-130		1		04/20/12 17:30	2037-26-5	S2
4-Bromofluorobenzene (S)	82	%	70-130		1		04/20/12 17:30	460-00-4	
1,2-Dichloroethane-d4 (S)	1366	%	70-132		1		04/20/12 17:30	17060-07-0	S2
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**7.0**	%	0.10	0.10	1		04/19/12 12:45		

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: SB-4-4 **Lab ID: 92116719013** Collected: 04/16/12 13:25 Received: 04/18/12 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV MW PAH by SIM	Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3546								
Acenaphthene	ND	ug/kg	253	38.0	20	04/20/12 13:30	04/23/12 15:07	83-32-9	
Acenaphthylene	ND	ug/kg	253	32.9	20	04/20/12 13:30	04/23/12 15:07	208-96-8	
Anthracene	ND	ug/kg	253	35.4	20	04/20/12 13:30	04/23/12 15:07	120-12-7	
Benzo(a)anthracene	ND	ug/kg	253	18.0	20	04/20/12 13:30	04/23/12 15:07	56-55-3	
Benzo(a)pyrene	ND	ug/kg	253	27.8	20	04/20/12 13:30	04/23/12 15:07	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	253	17.0	20	04/20/12 13:30	04/23/12 15:07	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	253	65.8	20	04/20/12 13:30	04/23/12 15:07	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	253	38.0	20	04/20/12 13:30	04/23/12 15:07	207-08-9	
Chrysene	ND	ug/kg	253	45.6	20	04/20/12 13:30	04/23/12 15:07	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	253	45.6	20	04/20/12 13:30	04/23/12 15:07	53-70-3	
Fluoranthene	ND	ug/kg	253	21.0	20	04/20/12 13:30	04/23/12 15:07	206-44-0	
Fluorene	**110J**	ug/kg	253	40.5	20	04/20/12 13:30	04/23/12 15:07	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	253	70.9	20	04/20/12 13:30	04/23/12 15:07	193-39-5	
1-Methylnaphthalene	**3140**	ug/kg	253	30.4	20	04/20/12 13:30	04/23/12 15:07	90-12-0	
2-Methylnaphthalene	**6240**	ug/kg	253	27.8	20	04/20/12 13:30	04/23/12 15:07	91-57-6	
Naphthalene	**5010**	ug/kg	253	58.2	20	04/20/12 13:30	04/23/12 15:07	91-20-3	
Phenanthrene	**162J**	ug/kg	253	38.0	20	04/20/12 13:30	04/23/12 15:07	85-01-8	
Pyrene	**47.5J**	ug/kg	253	45.6	20	04/20/12 13:30	04/23/12 15:07	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	0	%	10-128		20	04/20/12 13:30	04/23/12 15:07	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	10-110		20	04/20/12 13:30	04/23/12 15:07	321-60-8	
Terphenyl-d14 (S)	0	%	39-119		20	04/20/12 13:30	04/23/12 15:07	1718-51-0	
8260/5035A Volatile Organics	Analytical Method: EPA 8260								
Benzene	**2910**	ug/kg	2560	818	500		04/23/12 17:57	71-43-2	
Ethylbenzene	**9430**	ug/kg	2560	920	500		04/23/12 17:57	100-41-4	
Methyl-tert-butyl ether	**15800**	ug/kg	2560	767	500		04/23/12 17:57	1634-04-4	
Naphthalene	**13100**	ug/kg	2560	613	500		04/23/12 17:57	91-20-3	
Toluene	**20000**	ug/kg	2560	920	500		04/23/12 17:57	108-88-3	
m&p-Xylene	**35500**	ug/kg	5110	1840	500		04/23/12 17:57	179601-23-1	
o-Xylene	**16100**	ug/kg	2560	971	500		04/23/12 17:57	95-47-6	
Surrogates									
Dibromofluoromethane (S)	106	%	70-130		1		04/20/12 17:11	1868-53-7	
Toluene-d8 (S)	67	%	70-130		1		04/20/12 17:11	2037-26-5	S2
4-Bromofluorobenzene (S)	93	%	70-130		1		04/20/12 17:11	460-00-4	
1,2-Dichloroethane-d4 (S)	263	%	70-132		1		04/20/12 17:11	17060-07-0	S2
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.0**	%	0.10	0.10	1		04/20/12 12:43		

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: TRIP BLANK **Lab ID: 92116719015** Collected: 04/16/12 00:00 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.7	1		04/19/12 23:18	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/19/12 23:18	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/19/12 23:18	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/19/12 23:18	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		04/19/12 23:18	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/19/12 23:18	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/19/12 23:18	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		04/19/12 23:18	460-00-4	
Dibromofluoromethane (S)	102	%	70-130		1		04/19/12 23:18	1868-53-7	
1,2-Dichloroethane-d4 (S)	109	%	70-130		1		04/19/12 23:18	17060-07-0	
Toluene-d8 (S)	96	%	70-130		1		04/19/12 23:18	2037-26-5	

Sample: MW-1 **Lab ID: 92116719016** Collected: 04/17/12 09:55 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	04/25/12 17:35	04/26/12 06:10	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	49	%	60-140		1	04/25/12 17:35	04/26/12 06:10	301-79-56	S2
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**81.0**	ug/L	5.0	4.0	1	04/21/12 10:35	04/22/12 15:19	7439-92-1	
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead, Dissolved	ND	ug/L	5.0	4.0	1	04/25/12 15:15	04/25/12 18:52	7439-92-1	
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	14.3	0.69	1	04/19/12 10:00	04/20/12 15:06	83-32-9	
Acenaphthylene	ND	ug/L	14.3	0.66	1	04/19/12 10:00	04/20/12 15:06	208-96-8	
Anthracene	ND	ug/L	14.3	0.91	1	04/19/12 10:00	04/20/12 15:06	120-12-7	
Benzo(a)anthracene	ND	ug/L	14.3	1.0	1	04/19/12 10:00	04/20/12 15:06	56-55-3	
Benzo(a)pyrene	ND	ug/L	14.3	0.89	1	04/19/12 10:00	04/20/12 15:06	50-32-8	
Benzo(b)fluoranthene	**1.5J**	ug/L	14.3	0.81	1	04/19/12 10:00	04/20/12 15:06	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	14.3	0.97	1	04/19/12 10:00	04/20/12 15:06	191-24-2	
Benzo(k)fluoranthene	**1.7J**	ug/L	14.3	0.94	1	04/19/12 10:00	04/20/12 15:06	207-08-9	
Chrysene	ND	ug/L	14.3	1.0	1	04/19/12 10:00	04/20/12 15:06	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	14.3	0.81	1	04/19/12 10:00	04/20/12 15:06	53-70-3	
Fluoranthene	ND	ug/L	14.3	1.0	1	04/19/12 10:00	04/20/12 15:06	206-44-0	
Fluorene	**2.2J**	ug/L	14.3	0.91	1	04/19/12 10:00	04/20/12 15:06	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	14.3	0.83	1	04/19/12 10:00	04/20/12 15:06	193-39-5	
1-Methylnaphthalene	**42.9**	ug/L	14.3	14.3	1	04/19/12 10:00	04/20/12 15:06	90-12-0	
2-Methylnaphthalene	**77.6**	ug/L	14.3	0.44	1	04/19/12 10:00	04/20/12 15:06	91-57-6	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: MW-1 **Lab ID: 92116719016** Collected: 04/17/12 09:55 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Naphthalene	**166**	ug/L	28.6	1.2	2	04/19/12 10:00	04/23/12 09:40	91-20-3	
Phenanthrene	**2.4J**	ug/L	14.3	0.97	1	04/19/12 10:00	04/20/12 15:06	85-01-8	
Pyrene	ND	ug/L	14.3	0.94	1	04/19/12 10:00	04/20/12 15:06	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	50	%	10-120		1	04/19/12 10:00	04/20/12 15:06	4165-60-0	
2-Fluorobiphenyl (S)	44	%	10-120		1	04/19/12 10:00	04/20/12 15:06	321-60-8	
Terphenyl-d14 (S)	65	%	10-116		1	04/19/12 10:00	04/20/12 15:06	1718-51-0	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**32100J**	ug/L	40000	30700	400		04/20/12 12:22	75-85-4	
tert-Amylmethyl ether	ND	ug/L	4000	1360	400		04/20/12 12:22	994-05-8	
Benzene	**5110**	ug/L	2000	680	400		04/20/12 12:22	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	40000	12800	400		04/20/12 12:22	624-95-3	
tert-Butyl Alcohol	ND	ug/L	40000	23100	400		04/20/12 12:22	75-65-0	
tert-Butyl Formate	ND	ug/L	20000	2920	400		04/20/12 12:22	762-75-4	
1,2-Dichloroethane	ND	ug/L	2000	720	400		04/20/12 12:22	107-06-2	
Diisopropyl ether	ND	ug/L	2000	680	400		04/20/12 12:22	108-20-3	
Ethanol	ND	ug/L	80000	55100	400		04/20/12 12:22	64-17-5	
Ethylbenzene	**873J**	ug/L	2000	640	400		04/20/12 12:22	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	4000	1440	400		04/20/12 12:22	637-92-3	
Methyl-tert-butyl ether	**43200**	ug/L	2000	680	400		04/20/12 12:22	1634-04-4	
Naphthalene	ND	ug/L	2000	800	400		04/20/12 12:22	91-20-3	
Toluene	**6520**	ug/L	2000	640	400		04/20/12 12:22	108-88-3	
m&p-Xylene	**2720J**	ug/L	4000	1240	400		04/20/12 12:22	179601-23-1	
o-Xylene	**1220J**	ug/L	2000	640	400		04/20/12 12:22	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	109	%	70-130		400		04/20/12 12:22	460-00-4	
Dibromofluoromethane (S)	94	%	70-130		400		04/20/12 12:22	1868-53-7	
1,2-Dichloroethane-d4 (S)	90	%	70-130		400		04/20/12 12:22	17060-07-0	
Toluene-d8 (S)	92	%	70-130		400		04/20/12 12:22	2037-26-5	

Sample: MW-3 **Lab ID: 92116719017** Collected: 04/17/12 09:10 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	04/25/12 17:35	04/26/12 07:10	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	95	%	60-140		1	04/25/12 17:35	04/26/12 07:10	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**241**	ug/L	5.0	4.0	1	04/21/12 10:35	04/22/12 15:23	7439-92-1	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: MW-3 **Lab ID: 92116719017** Collected: 04/17/12 09:10 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead, Dissolved	ND	ug/L	5.0	4.0	1	04/25/12 15:15	04/25/12 18:55	7439-92-1	
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	15.4	0.74	1	04/19/12 10:00	04/20/12 15:33	83-32-9	
Acenaphthylene	ND	ug/L	15.4	0.71	1	04/19/12 10:00	04/20/12 15:33	208-96-8	
Anthracene	ND	ug/L	15.4	0.98	1	04/19/12 10:00	04/20/12 15:33	120-12-7	
Benzo(a)anthracene	ND	ug/L	15.4	1.1	1	04/19/12 10:00	04/20/12 15:33	56-55-3	
Benzo(a)pyrene	ND	ug/L	15.4	0.95	1	04/19/12 10:00	04/20/12 15:33	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	15.4	0.88	1	04/19/12 10:00	04/20/12 15:33	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	15.4	1.0	1	04/19/12 10:00	04/20/12 15:33	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	15.4	1.0	1	04/19/12 10:00	04/20/12 15:33	207-08-9	
Chrysene	ND	ug/L	15.4	1.1	1	04/19/12 10:00	04/20/12 15:33	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	15.4	0.88	1	04/19/12 10:00	04/20/12 15:33	53-70-3	
Fluoranthene	ND	ug/L	15.4	1.1	1	04/19/12 10:00	04/20/12 15:33	206-44-0	
Fluorene	ND	ug/L	15.4	0.98	1	04/19/12 10:00	04/20/12 15:33	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	15.4	0.89	1	04/19/12 10:00	04/20/12 15:33	193-39-5	
1-Methylnaphthalene	ND	ug/L	15.4	15.4	1	04/19/12 10:00	04/20/12 15:33	90-12-0	
2-Methylnaphthalene	ND	ug/L	15.4	0.48	1	04/19/12 10:00	04/20/12 15:33	91-57-6	
Naphthalene	ND	ug/L	15.4	0.66	1	04/19/12 10:00	04/20/12 15:33	91-20-3	
Phenanthrene	ND	ug/L	15.4	1.0	1	04/19/12 10:00	04/20/12 15:33	85-01-8	
Pyrene	ND	ug/L	15.4	1.0	1	04/19/12 10:00	04/20/12 15:33	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	70	%	10-120		1	04/19/12 10:00	04/20/12 15:33	4165-60-0	
2-Fluorobiphenyl (S)	61	%	10-120		1	04/19/12 10:00	04/20/12 15:33	321-60-8	
Terphenyl-d14 (S)	76	%	10-116		1	04/19/12 10:00	04/20/12 15:33	1718-51-0	
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	ND	ug/L	100	76.8	1		04/20/12 01:45	75-85-4	
tert-Amylmethyl ether	ND	ug/L	10.0	3.4	1		04/20/12 01:45	994-05-8	
Benzene	**2.3J**	ug/L	5.0	1.7	1		04/20/12 01:45	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	100	32.1	1		04/20/12 01:45	624-95-3	
tert-Butyl Alcohol	ND	ug/L	100	57.7	1		04/20/12 01:45	75-65-0	
tert-Butyl Formate	ND	ug/L	50.0	7.3	1		04/20/12 01:45	762-75-4	
1,2-Dichloroethane	ND	ug/L	5.0	1.8	1		04/20/12 01:45	107-06-2	
Diisopropyl ether	ND	ug/L	5.0	1.7	1		04/20/12 01:45	108-20-3	
Ethanol	ND	ug/L	200	138	1		04/20/12 01:45	64-17-5	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/20/12 01:45	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	10.0	3.6	1		04/20/12 01:45	637-92-3	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/20/12 01:45	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/20/12 01:45	91-20-3	
Toluene	**14.7**	ug/L	5.0	1.6	1		04/20/12 01:45	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/20/12 01:45	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/20/12 01:45	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		04/20/12 01:45	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		1		04/20/12 01:45	1868-53-7	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: MW-3 **Lab ID: 92116719017** Collected: 04/17/12 09:10 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Surrogates									
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		04/20/12 01:45	17060-07-0	
Toluene-d8 (S)	97	%	70-130		1		04/20/12 01:45	2037-26-5	

Sample: DUPLICATE **Lab ID: 92116719018** Collected: 04/17/12 00:00 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8011 GCS EDB and DBCP	Analytical Method: EPA 8011 Preparation Method: EPA 8011								
1,2-Dibromoethane (EDB)	ND	ug/L	0.020	0.020	1	04/25/12 17:35	04/26/12 07:51	106-93-4	
Surrogates									
1-Chloro-2-bromopropane (S)	83	%	60-140		1	04/25/12 17:35	04/26/12 07:51	301-79-56	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead	**98.7**	ug/L	5.0	4.0	1	04/21/12 10:35	04/22/12 15:36	7439-92-1	
6010 MET ICP, Lab Filtered	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Lead, Dissolved	ND	ug/L	5.0	4.0	1	04/25/12 15:15	04/25/12 19:08	7439-92-1	
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	10.5	0.51	1	04/19/12 10:00	04/20/12 16:01	83-32-9	
Acenaphthylene	ND	ug/L	10.5	0.48	1	04/19/12 10:00	04/20/12 16:01	208-96-8	
Anthracene	ND	ug/L	10.5	0.67	1	04/19/12 10:00	04/20/12 16:01	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.5	0.75	1	04/19/12 10:00	04/20/12 16:01	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.5	0.65	1	04/19/12 10:00	04/20/12 16:01	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.5	0.60	1	04/19/12 10:00	04/20/12 16:01	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.5	0.72	1	04/19/12 10:00	04/20/12 16:01	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.5	0.69	1	04/19/12 10:00	04/20/12 16:01	207-08-9	
Chrysene	ND	ug/L	10.5	0.74	1	04/19/12 10:00	04/20/12 16:01	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.5	0.60	1	04/19/12 10:00	04/20/12 16:01	53-70-3	
Fluoranthene	ND	ug/L	10.5	0.76	1	04/19/12 10:00	04/20/12 16:01	206-44-0	
Fluorene	**2.4J**	ug/L	10.5	0.67	1	04/19/12 10:00	04/20/12 16:01	86-73-7	
Indeno(1,2,3-cd)pyrene	**1.2J**	ug/L	10.5	0.61	1	04/19/12 10:00	04/20/12 16:01	193-39-5	
1-Methylnaphthalene	**43.5**	ug/L	10.5	10.5	1	04/19/12 10:00	04/20/12 16:01	90-12-0	
2-Methylnaphthalene	**78.6**	ug/L	10.5	0.33	1	04/19/12 10:00	04/20/12 16:01	91-57-6	
Naphthalene	**191**	ug/L	52.6	2.3	5	04/19/12 10:00	04/23/12 10:13	91-20-3	
Phenanthrene	**1.9J**	ug/L	10.5	0.72	1	04/19/12 10:00	04/20/12 16:01	85-01-8	
Pyrene	ND	ug/L	10.5	0.69	1	04/19/12 10:00	04/20/12 16:01	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	66	%	10-120		1	04/19/12 10:00	04/20/12 16:01	4165-60-0	
2-Fluorobiphenyl (S)	61	%	10-120		1	04/19/12 10:00	04/20/12 16:01	321-60-8	
Terphenyl-d14 (S)	81	%	10-116		1	04/19/12 10:00	04/20/12 16:01	1718-51-0	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: DUPLICATE **Lab ID: 92116719018** Collected: 04/17/12 00:00 Received: 04/18/12 16:35 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
tert-Amyl Alcohol	**40800**	ug/L	40000	30700	400		04/20/12 19:09	75-85-4	
tert-Amylmethyl ether	ND	ug/L	4000	1360	400		04/20/12 19:09	994-05-8	
Benzene	**6540**	ug/L	2000	680	400		04/20/12 19:09	71-43-2	
3,3-Dimethyl-1-Butanol	ND	ug/L	40000	12800	400		04/20/12 19:09	624-95-3	
tert-Butyl Alcohol	ND	ug/L	40000	23100	400		04/20/12 19:09	75-65-0	
tert-Butyl Formate	ND	ug/L	20000	2920	400		04/20/12 19:09	762-75-4	
1,2-Dichloroethane	ND	ug/L	2000	720	400		04/20/12 19:09	107-06-2	
Diisopropyl ether	ND	ug/L	2000	680	400		04/20/12 19:09	108-20-3	
Ethanol	ND	ug/L	80000	55100	400		04/20/12 19:09	64-17-5	
Ethylbenzene	**931J**	ug/L	2000	640	400		04/20/12 19:09	100-41-4	
Ethyl-tert-butyl ether	ND	ug/L	4000	1440	400		04/20/12 19:09	637-92-3	
Methyl-tert-butyl ether	**53800**	ug/L	2000	680	400		04/20/12 19:09	1634-04-4	
Naphthalene	ND	ug/L	2000	800	400		04/20/12 19:09	91-20-3	
Toluene	**7980**	ug/L	2000	640	400		04/20/12 19:09	108-88-3	
m&p-Xylene	**3140J**	ug/L	4000	1240	400		04/20/12 19:09	179601-23-1	
o-Xylene	**1430J**	ug/L	2000	640	400		04/20/12 19:09	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		400		04/20/12 19:09	460-00-4	
Dibromofluoromethane (S)	107	%	70-130		400		04/20/12 19:09	1868-53-7	
1,2-Dichloroethane-d4 (S)	108	%	70-130		400		04/20/12 19:09	17060-07-0	
Toluene-d8 (S)	101	%	70-130		400		04/20/12 19:09	2037-26-5	

Sample: FIEL BLANK **Lab ID: 92116719019** Collected: 04/16/12 18:45 Received: 04/18/12 17:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Acenaphthene	ND	ug/L	14.9	0.72	1	04/19/12 10:00	04/20/12 13:41	83-32-9	
Acenaphthylene	ND	ug/L	14.9	0.69	1	04/19/12 10:00	04/20/12 13:41	208-96-8	
Anthracene	ND	ug/L	14.9	0.96	1	04/19/12 10:00	04/20/12 13:41	120-12-7	
Benzo(a)anthracene	ND	ug/L	14.9	1.1	1	04/19/12 10:00	04/20/12 13:41	56-55-3	
Benzo(a)pyrene	ND	ug/L	14.9	0.93	1	04/19/12 10:00	04/20/12 13:41	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	14.9	0.85	1	04/19/12 10:00	04/20/12 13:41	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	14.9	1.0	1	04/19/12 10:00	04/20/12 13:41	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	14.9	0.99	1	04/19/12 10:00	04/20/12 13:41	207-08-9	
Chrysene	**1.8J**	ug/L	14.9	1.0	1	04/19/12 10:00	04/20/12 13:41	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	14.9	0.85	1	04/19/12 10:00	04/20/12 13:41	53-70-3	
Fluoranthene	ND	ug/L	14.9	1.1	1	04/19/12 10:00	04/20/12 13:41	206-44-0	
Fluorene	ND	ug/L	14.9	0.96	1	04/19/12 10:00	04/20/12 13:41	86-73-7	
Indeno(1,2,3-cd)pyrene	ND	ug/L	14.9	0.87	1	04/19/12 10:00	04/20/12 13:41	193-39-5	
1-Methylnaphthalene	ND	ug/L	14.9	14.9	1	04/19/12 10:00	04/20/12 13:41	90-12-0	
2-Methylnaphthalene	ND	ug/L	14.9	0.46	1	04/19/12 10:00	04/20/12 13:41	91-57-6	
Naphthalene	ND	ug/L	14.9	0.64	1	04/19/12 10:00	04/20/12 13:41	91-20-3	
Phenanthrene	ND	ug/L	14.9	1.0	1	04/19/12 10:00	04/20/12 13:41	85-01-8	

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ANALYTICAL RESULTS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Sample: FIEL BLANK **Lab ID: 92116719019** Collected: 04/16/12 18:45 Received: 04/18/12 17:41 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV PAH SPE SC	Analytical Method: EPA 8270 Preparation Method: EPA 3535								
Pyrene	ND	ug/L	14.9	0.99	1	04/19/12 10:00	04/20/12 13:41	129-00-0	
Surrogates									
Nitrobenzene-d5 (S)	68	%	10-120		1	04/19/12 10:00	04/20/12 13:41	4165-60-0	
2-Fluorobiphenyl (S)	67	%	10-120		1	04/19/12 10:00	04/20/12 13:41	321-60-8	
Terphenyl-d14 (S)	70	%	10-116		1	04/19/12 10:00	04/20/12 13:41	1718-51-0	
8260 MSV	Analytical Method: EPA 8260								
Benzene	ND	ug/L	5.0	1.7	1		04/19/12 23:36	71-43-2	
Ethylbenzene	ND	ug/L	5.0	1.6	1		04/19/12 23:36	100-41-4	
Methyl-tert-butyl ether	ND	ug/L	5.0	1.7	1		04/19/12 23:36	1634-04-4	
Naphthalene	ND	ug/L	5.0	2.0	1		04/19/12 23:36	91-20-3	
Toluene	ND	ug/L	5.0	1.6	1		04/19/12 23:36	108-88-3	
m&p-Xylene	ND	ug/L	10.0	3.1	1		04/19/12 23:36	179601-23-1	
o-Xylene	ND	ug/L	5.0	1.6	1		04/19/12 23:36	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		04/19/12 23:36	460-00-4	
Dibromofluoromethane (S)	99	%	70-130		1		04/19/12 23:36	1868-53-7	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		04/19/12 23:36	17060-07-0	
Toluene-d8 (S)	94	%	70-130		1		04/19/12 23:36	2037-26-5	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MPRP/10403
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 92116719001

METHOD BLANK: 752408 Matrix: Water
Associated Lab Samples: 92116719001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	04/21/12 21:35	

LABORATORY CONTROL SAMPLE: 752409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	494	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 752410 752411

Parameter	Units	92116360001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	15.9	500	500	492	483	95	93	75-125	2	20	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MPRP/10417 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 92116719002, 92116719016, 92116719017, 92116719018

METHOD BLANK: 753454 Matrix: Water
Associated Lab Samples: 92116719002, 92116719016, 92116719017, 92116719018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lead	ug/L	ND	5.0	04/22/12 14:28	

LABORATORY CONTROL SAMPLE: 753455

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	500	505	101	80-120	

MATRIX SPIKE SAMPLE: 753456

Parameter	Units	92116925001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Lead	ug/L	117	500	620	101	75-125	

SAMPLE DUPLICATE: 753457

Parameter	Units	92116925002 Result	Dup Result	RPD	Max RPD	Qualifiers
Lead	ug/L	ND	ND		20	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MPRP/10452 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Filtered
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018

METHOD BLANK: 754956 Matrix: Water
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	ND	100	04/25/12 18:34	
Antimony, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Arsenic, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Barium, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Beryllium, Dissolved	ug/L	ND	1.0	04/25/12 18:34	
Boron, Dissolved	ug/L	ND	50.0	04/25/12 18:34	
Cadmium, Dissolved	ug/L	ND	1.0	04/25/12 18:34	
Calcium, Dissolved	ug/L	ND	100	04/25/12 18:34	
Chromium, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Cobalt, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Copper, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Iron, Dissolved	ug/L	ND	50.0	04/25/12 18:34	
Lead, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Magnesium, Dissolved	ug/L	3.9J	100	04/25/12 18:34	
Manganese, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Molybdenum, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Nickel, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Potassium, Dissolved	ug/L	16.4J	5000	04/25/12 18:34	
Selenium, Dissolved	ug/L	ND	10.0	04/25/12 18:34	
Silicon, Dissolved	ug/L	7.4J	100	04/25/12 18:34	
Sodium, Dissolved	ug/L	19.0J	5000	04/25/12 18:34	
Strontium, Dissolved	ug/L	0.021J	5.0	04/25/12 18:34	
Thallium, Dissolved	ug/L	ND	10.0	04/25/12 18:34	
Tin, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Titanium, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Vanadium, Dissolved	ug/L	ND	5.0	04/25/12 18:34	
Zinc, Dissolved	ug/L	4.1J	10.0	04/25/12 18:34	

LABORATORY CONTROL SAMPLE: 754957

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	5000	4640	93	80-120	
Antimony, Dissolved	ug/L	500	458	92	80-120	
Arsenic, Dissolved	ug/L	500	454	91	80-120	
Barium, Dissolved	ug/L	500	461	92	80-120	
Beryllium, Dissolved	ug/L	500	462	92	80-120	
Boron, Dissolved	ug/L	500	477	95	80-120	
Cadmium, Dissolved	ug/L	500	464	93	80-120	
Calcium, Dissolved	ug/L	5000	4680	94	80-120	
Chromium, Dissolved	ug/L	500	460	92	80-120	
Cobalt, Dissolved	ug/L	500	463	93	80-120	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

LABORATORY CONTROL SAMPLE: 754957

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper, Dissolved	ug/L	500	466	93	80-120	
Iron, Dissolved	ug/L	5000	4660	93	80-120	
Lead, Dissolved	ug/L	500	471	94	80-120	
Magnesium, Dissolved	ug/L	5000	4690	94	80-120	
Manganese, Dissolved	ug/L	500	464	93	80-120	
Molybdenum, Dissolved	ug/L	500	469	94	80-120	
Nickel, Dissolved	ug/L	500	464	93	80-120	
Potassium, Dissolved	ug/L	5000	4400J	88	80-120	
Selenium, Dissolved	ug/L	500	463	93	80-120	
Silicon, Dissolved	ug/L	2500	2360	94	80-120	
Sodium, Dissolved	ug/L	5000	4680J	94	80-120	
Strontium, Dissolved	ug/L	500	468	94	80-120	
Thallium, Dissolved	ug/L	500	459	92	80-120	
Tin, Dissolved	ug/L	500	474	95	80-120	
Titanium, Dissolved	ug/L	500	474	95	80-120	
Vanadium, Dissolved	ug/L	500	467	93	80-120	
Zinc, Dissolved	ug/L	500	455	91	80-120	

MATRIX SPIKE SAMPLE: 754958

Parameter	Units	92116719001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	113	5000	4780	93	75-125	
Antimony, Dissolved	ug/L	3.8J	500	467	93	75-125	
Arsenic, Dissolved	ug/L	ND	500	465	93	75-125	
Barium, Dissolved	ug/L	24.1	500	483	92	75-125	
Beryllium, Dissolved	ug/L	0.18J	500	465	93	75-125	
Boron, Dissolved	ug/L	22.1J	500	500	96	75-125	
Cadmium, Dissolved	ug/L	ND	500	463	93	75-125	
Calcium, Dissolved	ug/L	7640	5000	12100	90	75-125	
Chromium, Dissolved	ug/L	ND	500	461	92	75-125	
Cobalt, Dissolved	ug/L	1.0J	500	462	92	75-125	
Copper, Dissolved	ug/L	0.60J	500	469	94	75-125	
Iron, Dissolved	ug/L	459	5000	5100	93	75-125	
Lead, Dissolved	ug/L	ND	500	463	92	75-125	
Magnesium, Dissolved	ug/L	552	5000	5200	93	75-125	
Manganese, Dissolved	ug/L	37.5	500	499	92	75-125	
Molybdenum, Dissolved	ug/L	1.3J	500	473	94	75-125	
Nickel, Dissolved	ug/L	ND	500	460	92	75-125	
Potassium, Dissolved	ug/L	1380J	5000	6180	96	75-125	
Selenium, Dissolved	ug/L	ND	500	485	97	75-125	
Silicon, Dissolved	ug/L	3140	2500	5500	94	75-125	
Sodium, Dissolved	ug/L	3280J	5000	8490	104	75-125	
Strontium, Dissolved	ug/L	12.4	500	481	94	75-125	
Thallium, Dissolved	ug/L	ND	500	446	89	75-125	
Tin, Dissolved	ug/L	ND	500	472	94	75-125	
Titanium, Dissolved	ug/L	4.6J	500	481	95	75-125	
Vanadium, Dissolved	ug/L	0.57J	500	469	94	75-125	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

MATRIX SPIKE SAMPLE: 754958

Parameter	Units	92116719001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Zinc, Dissolved	ug/L	4.9J	500	456	90	75-125	

SAMPLE DUPLICATE: 754959

Parameter	Units	92116719002 Result	Dup Result	RPD	Max RPD	Qualifiers
Aluminum, Dissolved	ug/L	ND	ND		20	
Antimony, Dissolved	ug/L	2.9J	ND		20	
Arsenic, Dissolved	ug/L	ND	ND		20	
Barium, Dissolved	ug/L	0.51J	ND		20	
Beryllium, Dissolved	ug/L	0.19J	ND		20	
Boron, Dissolved	ug/L	5.3J	ND		20	
Cadmium, Dissolved	ug/L	ND	ND		20	
Calcium, Dissolved	ug/L	27.3J	ND		20	
Chromium, Dissolved	ug/L	ND	ND		20	
Cobalt, Dissolved	ug/L	ND	ND		20	
Copper, Dissolved	ug/L	0.37J	ND		20	
Iron, Dissolved	ug/L	ND	ND		20	
Lead, Dissolved	ug/L	ND	ND		20	
Magnesium, Dissolved	ug/L	6.4J	4.6J		20	
Manganese, Dissolved	ug/L	0.51J	ND		20	
Molybdenum, Dissolved	ug/L	1.6J	ND		20	
Nickel, Dissolved	ug/L	ND	ND		20	
Potassium, Dissolved	ug/L	19.0J	15.2J		20	
Selenium, Dissolved	ug/L	ND	ND		20	
Silicon, Dissolved	ug/L	8.9J	4.5J		20	
Sodium, Dissolved	ug/L	177J	173J		20	
Strontium, Dissolved	ug/L	0.33J	0.099J		20	
Thallium, Dissolved	ug/L	5.0J	ND		20	
Tin, Dissolved	ug/L	ND	ND		20	
Titanium, Dissolved	ug/L	0.70J	0.13J		20	
Vanadium, Dissolved	ug/L	0.40J	ND		20	
Zinc, Dissolved	ug/L	3.2J	3.1J		20	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MSV/18852 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV SC
Associated Lab Samples: 92116719001, 92116719002, 92116719003, 92116719004, 92116719005, 92116719015, 92116719017, 92116719019

METHOD BLANK: 752358 Matrix: Water
Associated Lab Samples: 92116719001, 92116719002, 92116719003, 92116719004, 92116719005, 92116719015, 92116719017, 92116719019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/19/12 21:46	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/19/12 21:46	
Benzene	ug/L	ND	5.0	04/19/12 21:46	
Diisopropyl ether	ug/L	ND	5.0	04/19/12 21:46	
Ethanol	ug/L	ND	200	04/19/12 21:46	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/19/12 21:46	
Ethylbenzene	ug/L	ND	5.0	04/19/12 21:46	
m&p-Xylene	ug/L	ND	10.0	04/19/12 21:46	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/19/12 21:46	
Naphthalene	ug/L	ND	5.0	04/19/12 21:46	
o-Xylene	ug/L	ND	5.0	04/19/12 21:46	
tert-Amyl Alcohol	ug/L	ND	100	04/19/12 21:46	
tert-Amylmethyl ether	ug/L	ND	10.0	04/19/12 21:46	
tert-Butyl Alcohol	ug/L	ND	100	04/19/12 21:46	
tert-Butyl Formate	ug/L	ND	50.0	04/19/12 21:46	
Toluene	ug/L	ND	5.0	04/19/12 21:46	
1,2-Dichloroethane-d4 (S)	%	101	70-130	04/19/12 21:46	
4-Bromofluorobenzene (S)	%	105	70-130	04/19/12 21:46	
Dibromofluoromethane (S)	%	101	70-130	04/19/12 21:46	
Toluene-d8 (S)	%	94	70-130	04/19/12 21:46	

LABORATORY CONTROL SAMPLE: 752359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	54.2	108	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1070	107	70-130	
Benzene	ug/L	50	48.7	97	70-130	
Diisopropyl ether	ug/L	50	50.9	102	70-130	
Ethanol	ug/L	2000	2310	116	70-130	
Ethyl-tert-butyl ether	ug/L	100	115	115	70-130	
Ethylbenzene	ug/L	50	51.5	103	70-130	
m&p-Xylene	ug/L	100	103	103	70-130	
Methyl-tert-butyl ether	ug/L	50	56.1	112	70-130	
Naphthalene	ug/L	50	52.0	104	70-130	
o-Xylene	ug/L	50	49.6	99	70-130	
tert-Amyl Alcohol	ug/L	1000	1110	111	70-130	
tert-Amylmethyl ether	ug/L	100	109	109	70-130	
tert-Butyl Alcohol	ug/L	500	666	133	70-130	L3
tert-Butyl Formate	ug/L	400	411	103	70-130	
Toluene	ug/L	50	50.2	100	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

LABORATORY CONTROL SAMPLE: 752359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Dibromofluoromethane (S)	%			102	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 752360 752361

Parameter	Units	92116719017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	53.7	55.6	107	111	70-130	3	30	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1130	1290	113	129	70-130	14	30	
Benzene	ug/L	2.3J	50	50	52.0	57.4	99	110	70-130	10	30	
Diisopropyl ether	ug/L	ND	50	50	47.7	52.1	95	104	70-130	9	30	
Ethanol	ug/L	ND	2000	2000	2490	2450	125	123	70-130	1	30	
Ethyl-tert-butyl ether	ug/L	ND	100	100	109	118	109	118	70-130	8	30	
Ethylbenzene	ug/L	ND	50	50	46.4	56.2	91	110	70-130	19	30	
m&p-Xylene	ug/L	ND	100	100	96.6	113	94	110	70-130	16	30	
Methyl-tert-butyl ether	ug/L	ND	50	50	55.3	58.7	109	116	70-130	6	30	
Naphthalene	ug/L	ND	50	50	50.6	58.6	101	117	70-130	15	30	
o-Xylene	ug/L	ND	50	50	45.3	54.8	89	107	70-130	19	30	
tert-Amyl Alcohol	ug/L	ND	1000	1000	1270	1300	127	130	70-130	3	30	
tert-Amylmethyl ether	ug/L	ND	100	100	108	119	108	119	70-130	10	30	
tert-Butyl Alcohol	ug/L	ND	500	500	656	704	131	141	70-130	7	30	M0
tert-Butyl Formate	ug/L	ND	400	400	ND	ND	0	0	70-130		30	P5
Toluene	ug/L	14.7	50	50	63.7	69.6	98	110	70-130	9	30	
1,2-Dichloroethane-d4 (S)	%						108	99	70-130			
4-Bromofluorobenzene (S)	%						101	103	70-130			
Dibromofluoromethane (S)	%						102	98	70-130			
Toluene-d8 (S)	%						103	100	70-130			

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MSV/18859
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV SC
Associated Lab Samples: 92116719016, 92116719018

METHOD BLANK: 752807
Matrix: Water
Associated Lab Samples: 92116719016, 92116719018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	5.0	04/20/12 11:08	
3,3-Dimethyl-1-Butanol	ug/L	ND	100	04/20/12 11:08	
Benzene	ug/L	ND	5.0	04/20/12 11:08	
Diisopropyl ether	ug/L	ND	5.0	04/20/12 11:08	
Ethanol	ug/L	ND	200	04/20/12 11:08	
Ethyl-tert-butyl ether	ug/L	ND	10.0	04/20/12 11:08	
Ethylbenzene	ug/L	ND	5.0	04/20/12 11:08	
m&p-Xylene	ug/L	ND	10.0	04/20/12 11:08	
Methyl-tert-butyl ether	ug/L	ND	5.0	04/20/12 11:08	
Naphthalene	ug/L	ND	5.0	04/20/12 11:08	
o-Xylene	ug/L	ND	5.0	04/20/12 11:08	
tert-Amyl Alcohol	ug/L	ND	100	04/20/12 11:08	
tert-Amylmethyl ether	ug/L	ND	10.0	04/20/12 11:08	
tert-Butyl Alcohol	ug/L	ND	100	04/20/12 11:08	
tert-Butyl Formate	ug/L	ND	50.0	04/20/12 11:08	
Toluene	ug/L	ND	5.0	04/20/12 11:08	
1,2-Dichloroethane-d4 (S)	%	94	70-130	04/20/12 11:08	
4-Bromofluorobenzene (S)	%	107	70-130	04/20/12 11:08	
Dibromofluoromethane (S)	%	97	70-130	04/20/12 11:08	
Toluene-d8 (S)	%	88	70-130	04/20/12 11:08	

LABORATORY CONTROL SAMPLE: 752808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	48.4	97	70-130	
3,3-Dimethyl-1-Butanol	ug/L	1000	1010	101	70-130	
Benzene	ug/L	50	48.0	96	70-130	
Diisopropyl ether	ug/L	50	41.2	82	70-130	
Ethanol	ug/L	2000	1920	96	70-130	
Ethyl-tert-butyl ether	ug/L	100	98.8	99	70-130	
Ethylbenzene	ug/L	50	49.7	99	70-130	
m&p-Xylene	ug/L	100	100	100	70-130	
Methyl-tert-butyl ether	ug/L	50	48.8	98	70-130	
Naphthalene	ug/L	50	51.1	102	70-130	
o-Xylene	ug/L	50	46.1	92	70-130	
tert-Amyl Alcohol	ug/L	1000	1060	106	70-130	
tert-Amylmethyl ether	ug/L	100	102	102	70-130	
tert-Butyl Alcohol	ug/L	500	512	102	70-130	
tert-Butyl Formate	ug/L	400	391	98	70-130	
Toluene	ug/L	50	49.7	99	70-130	
1,2-Dichloroethane-d4 (S)	%			95	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

LABORATORY CONTROL SAMPLE: 752808

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
4-Bromofluorobenzene (S)	%			109	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 752809 752810

Parameter	Units	92116839004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane	ug/L	ND	50	50	54.5	54.2	109	108	70-130	1	30	
3,3-Dimethyl-1-Butanol	ug/L	ND	1000	1000	1190	1200	119	120	70-130	0	30	
Benzene	ug/L	ND	50	50	55.1	58.7	110	117	70-130	6	30	
Diisopropyl ether	ug/L	ND	50	50	52.3	54.6	105	109	70-130	4	30	
Ethanol	ug/L	ND	2000	2000	2380	2510	119	125	70-130	5	30	
Ethyl-tert-butyl ether	ug/L	ND	100	100	116	122	116	122	70-130	4	30	
Ethylbenzene	ug/L	ND	50	50	56.1	55.3	112	111	70-130	2	30	
m&p-Xylene	ug/L	ND	100	100	110	108	110	108	70-130	1	30	
Methyl-tert-butyl ether	ug/L	ND	50	50	55.9	57.1	112	114	70-130	2	30	
Naphthalene	ug/L	ND	50	50	55.7	58.1	110	115	70-130	4	30	
o-Xylene	ug/L	ND	50	50	51.2	50.5	102	101	70-130	1	30	
tert-Amyl Alcohol	ug/L	ND	1000	1000	1180	1300	118	130	70-130	9	30	
tert-Amylmethyl ether	ug/L	ND	100	100	112	118	112	118	70-130	5	30	
tert-Butyl Alcohol	ug/L	ND	500	500	683	704	137	141	70-130	3	30	M0
tert-Butyl Formate	ug/L	ND	400	400	168	132	42	33	70-130	24	30	P5
Toluene	ug/L	ND	50	50	56.7	58.1	113	116	70-130	3	30	
1,2-Dichloroethane-d4 (S)	%						101	100	70-130			
4-Bromofluorobenzene (S)	%						103	103	70-130			
Dibromofluoromethane (S)	%						101	102	70-130			
Toluene-d8 (S)	%						102	106	70-130			

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MSV/18867 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92116719006, 92116719007, 92116719008, 92116719010, 92116719011, 92116719012, 92116719013

METHOD BLANK: 752914 Matrix: Solid
Associated Lab Samples: 92116719006, 92116719007, 92116719008, 92116719010, 92116719011, 92116719012, 92116719013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	6.5	04/20/12 15:22	
Ethylbenzene	ug/kg	ND	6.5	04/20/12 15:22	
m&p-Xylene	ug/kg	ND	13.0	04/20/12 15:22	
Methyl-tert-butyl ether	ug/kg	ND	6.5	04/20/12 15:22	
Naphthalene	ug/kg	ND	6.5	04/20/12 15:22	
o-Xylene	ug/kg	ND	6.5	04/20/12 15:22	
Toluene	ug/kg	ND	6.5	04/20/12 15:22	
1,2-Dichloroethane-d4 (S)	%	102	70-132	04/20/12 15:22	
4-Bromofluorobenzene (S)	%	97	70-130	04/20/12 15:22	
Dibromofluoromethane (S)	%	103	70-130	04/20/12 15:22	
Toluene-d8 (S)	%	99	70-130	04/20/12 15:22	

LABORATORY CONTROL SAMPLE: 752915

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	49.7	51.7	104	70-130	
Ethylbenzene	ug/kg	49.7	50.4	101	70-137	
m&p-Xylene	ug/kg	99.4	99.3	100	70-140	
Methyl-tert-butyl ether	ug/kg	49.7	55.6	112	45-150	
Naphthalene	ug/kg	49.7	55.0	111	70-148	
o-Xylene	ug/kg	49.7	48.8	98	70-141	
Toluene	ug/kg	49.7	51.0	103	70-130	
1,2-Dichloroethane-d4 (S)	%			101	70-132	
4-Bromofluorobenzene (S)	%			99	70-130	
Dibromofluoromethane (S)	%			102	70-130	
Toluene-d8 (S)	%			100	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: MSV/18880
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92116719009

METHOD BLANK: 753697
Matrix: Solid
Associated Lab Samples: 92116719009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Benzene	ug/kg	ND	6.0	04/23/12 14:36	
Ethylbenzene	ug/kg	ND	6.0	04/23/12 14:36	
m&p-Xylene	ug/kg	ND	12.0	04/23/12 14:36	
Methyl-tert-butyl ether	ug/kg	ND	6.0	04/23/12 14:36	
Naphthalene	ug/kg	ND	6.0	04/23/12 14:36	
o-Xylene	ug/kg	ND	6.0	04/23/12 14:36	
Toluene	ug/kg	ND	6.0	04/23/12 14:36	
1,2-Dichloroethane-d4 (S)	%	106	70-132	04/23/12 14:36	
4-Bromofluorobenzene (S)	%	99	70-130	04/23/12 14:36	
Dibromofluoromethane (S)	%	108	70-130	04/23/12 14:36	
Toluene-d8 (S)	%	101	70-130	04/23/12 14:36	

LABORATORY CONTROL SAMPLE: 753698

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	60.1	65.6	109	70-130	
Ethylbenzene	ug/kg	60.1	64.4	107	70-137	
m&p-Xylene	ug/kg	120	126	105	70-140	
Methyl-tert-butyl ether	ug/kg	60.1	66.5	111	45-150	
Naphthalene	ug/kg	60.1	66.2	110	70-148	
o-Xylene	ug/kg	60.1	61.8	103	70-141	
Toluene	ug/kg	60.1	65.1	108	70-130	
1,2-Dichloroethane-d4 (S)	%			102	70-132	
4-Bromofluorobenzene (S)	%			100	70-130	
Dibromofluoromethane (S)	%			104	70-130	
Toluene-d8 (S)	%			102	70-130	

MATRIX SPIKE SAMPLE: 754077

Parameter	Units	92116927006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	ND	54.2	40.5	75	50-166	
Toluene	ug/kg	ND	54.2	47.8	88	52-163	
1,2-Dichloroethane-d4 (S)	%				94	70-132	
4-Bromofluorobenzene (S)	%				96	70-130	
Dibromofluoromethane (S)	%				97	70-130	
Toluene-d8 (S)	%				99	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

SAMPLE DUPLICATE: 754076

Parameter	Units	92116919005 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/kg	ND	ND		30	
Ethylbenzene	ug/kg	ND	ND		30	
m&p-Xylene	ug/kg	ND	ND		30	
Methyl-tert-butyl ether	ug/kg	ND	ND		30	
Naphthalene	ug/kg	ND	ND		30	
o-Xylene	ug/kg	ND	ND		30	
Toluene	ug/kg	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	104	107	6		
4-Bromofluorobenzene (S)	%	99	97	2		
Dibromofluoromethane (S)	%	106	105	2		
Toluene-d8 (S)	%	101	98	0		

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: OEXT/17253 Analysis Method: EPA 8011
QC Batch Method: EPA 8011 Analysis Description: GCS 8011 EDB DBCP
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018

METHOD BLANK: 755028 Matrix: Water
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	0.020	04/26/12 02:27	
1-Chloro-2-bromopropane (S)	%	92	60-140	04/26/12 02:27	

LABORATORY CONTROL SAMPLE & LCSD: 755029 755030

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	.28	0.28	0.28	98	98	60-140	1	20	
1-Chloro-2-bromopropane (S)	%				98	97	60-140			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 755031 755032

Parameter	Units	92116719016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dibromoethane (EDB)	ug/L	ND	.28	.28	0.16	0.17	56	62	60-140	10	20	M0
1-Chloro-2-bromopropane (S)	%						63	70	60-140			

SAMPLE DUPLICATE: 755033

Parameter	Units	92116719017 Result	Dup Result	RPD	Max RPD	Qualifiers
1,2-Dibromoethane (EDB)	ug/L	ND	ND		20	
1-Chloro-2-bromopropane (S)	%	95	94	1		

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: OEXT/17162 Analysis Method: EPA 8270 by SIM
QC Batch Method: EPA 3546 Analysis Description: 8270 MSSV PAH by SIM
Associated Lab Samples: 92116719006, 92116719007, 92116719008, 92116719009, 92116719010, 92116719011, 92116719012, 92116719013

METHOD BLANK: 752138 Matrix: Solid
Associated Lab Samples: 92116719006, 92116719007, 92116719008, 92116719009, 92116719010, 92116719011, 92116719012, 92116719013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/kg	ND	10.0	04/20/12 20:25	
2-Methylnaphthalene	ug/kg	ND	10.0	04/20/12 20:25	
Acenaphthene	ug/kg	ND	10.0	04/20/12 20:25	
Acenaphthylene	ug/kg	ND	10.0	04/20/12 20:25	
Anthracene	ug/kg	ND	10.0	04/20/12 20:25	
Benzo(a)anthracene	ug/kg	ND	10.0	04/20/12 20:25	
Benzo(a)pyrene	ug/kg	ND	10.0	04/20/12 20:25	
Benzo(b)fluoranthene	ug/kg	ND	10.0	04/20/12 20:25	
Benzo(g,h,i)perylene	ug/kg	ND	10.0	04/20/12 20:25	
Benzo(k)fluoranthene	ug/kg	ND	10.0	04/20/12 20:25	
Chrysene	ug/kg	ND	10.0	04/20/12 20:25	
Dibenz(a,h)anthracene	ug/kg	ND	10.0	04/20/12 20:25	
Fluoranthene	ug/kg	ND	10.0	04/20/12 20:25	
Fluorene	ug/kg	ND	10.0	04/20/12 20:25	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	10.0	04/20/12 20:25	
Naphthalene	ug/kg	ND	10.0	04/20/12 20:25	
Phenanthrene	ug/kg	ND	10.0	04/20/12 20:25	
Pyrene	ug/kg	ND	10.0	04/20/12 20:25	
2-Fluorobiphenyl (S)	%	73	10-110	04/20/12 20:25	
Nitrobenzene-d5 (S)	%	78	10-128	04/20/12 20:25	
Terphenyl-d14 (S)	%	98	39-119	04/20/12 20:25	

LABORATORY CONTROL SAMPLE: 752139

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/kg	33.3	31.9	96	29-108	
2-Methylnaphthalene	ug/kg	33.3	35.3	106	30-104	L1
Acenaphthene	ug/kg	33.3	28.2	85	38-109	
Acenaphthylene	ug/kg	33.3	27.9	84	41-109	
Anthracene	ug/kg	33.3	31.8	95	45-114	
Benzo(a)anthracene	ug/kg	33.3	34.1	102	45-109	
Benzo(a)pyrene	ug/kg	33.3	36.2	108	47-117	
Benzo(b)fluoranthene	ug/kg	33.3	37.0	111	32-113	
Benzo(g,h,i)perylene	ug/kg	33.3	34.4	103	10-149	
Benzo(k)fluoranthene	ug/kg	33.3	36.8	111	41-104	L1
Chrysene	ug/kg	33.3	33.2	100	35-116	
Dibenz(a,h)anthracene	ug/kg	33.3	37.8	113	13-139	
Fluoranthene	ug/kg	33.3	32.9	99	43-110	
Fluorene	ug/kg	33.3	28.7	86	45-111	
Indeno(1,2,3-cd)pyrene	ug/kg	33.3	36.3	109	17-135	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

LABORATORY CONTROL SAMPLE: 752139

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Naphthalene	ug/kg	33.3	34.7	104	26-120	
Phenanthrene	ug/kg	33.3	29.4	88	45-110	
Pyrene	ug/kg	33.3	33.1	99	38-114	
2-Fluorobiphenyl (S)	%			75	10-110	
Nitrobenzene-d5 (S)	%			76	10-128	
Terphenyl-d14 (S)	%			104	39-119	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: OEXT/17163 Analysis Method: EPA 8270
QC Batch Method: EPA 3535 Analysis Description: 8270 Water PAH MSSV SC
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018, 92116719019

METHOD BLANK: 752151 Matrix: Water
Associated Lab Samples: 92116719001, 92116719002, 92116719016, 92116719017, 92116719018, 92116719019

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1-Methylnaphthalene	ug/L	ND	10.0	04/23/12 09:07	
2-Methylnaphthalene	ug/L	ND	10.0	04/23/12 09:07	
Acenaphthene	ug/L	ND	10.0	04/23/12 09:07	
Acenaphthylene	ug/L	ND	10.0	04/23/12 09:07	
Anthracene	ug/L	ND	10.0	04/23/12 09:07	
Benzo(a)anthracene	ug/L	ND	10.0	04/23/12 09:07	
Benzo(a)pyrene	ug/L	ND	10.0	04/23/12 09:07	
Benzo(b)fluoranthene	ug/L	ND	10.0	04/23/12 09:07	
Benzo(g,h,i)perylene	ug/L	ND	10.0	04/23/12 09:07	
Benzo(k)fluoranthene	ug/L	ND	10.0	04/23/12 09:07	
Chrysene	ug/L	ND	10.0	04/23/12 09:07	
Dibenz(a,h)anthracene	ug/L	ND	10.0	04/23/12 09:07	
Fluoranthene	ug/L	ND	10.0	04/23/12 09:07	
Fluorene	ug/L	ND	10.0	04/23/12 09:07	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	04/23/12 09:07	
Naphthalene	ug/L	ND	10.0	04/23/12 09:07	
Phenanthrene	ug/L	ND	10.0	04/23/12 09:07	
Pyrene	ug/L	ND	10.0	04/23/12 09:07	
2-Fluorobiphenyl (S)	%	71	10-120	04/23/12 09:07	
Nitrobenzene-d5 (S)	%	67	10-120	04/23/12 09:07	
Terphenyl-d14 (S)	%	82	10-116	04/23/12 09:07	

LABORATORY CONTROL SAMPLE: 752152

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1-Methylnaphthalene	ug/L	50	35.5	71	70-130	
2-Methylnaphthalene	ug/L	50	35.4	71	70-130	
Acenaphthene	ug/L	50	39.1	78	70-130	
Acenaphthylene	ug/L	50	38.4	77	70-130	
Anthracene	ug/L	50	40.0	80	70-130	
Benzo(a)anthracene	ug/L	50	36.8	74	70-130	
Benzo(a)pyrene	ug/L	50	36.4	73	70-130	
Benzo(b)fluoranthene	ug/L	50	37.4	75	70-130	
Benzo(g,h,i)perylene	ug/L	50	35.4	71	70-130	
Benzo(k)fluoranthene	ug/L	50	38.0	76	70-130	
Chrysene	ug/L	50	38.0	76	70-130	
Dibenz(a,h)anthracene	ug/L	50	35.2	70	70-130	
Fluoranthene	ug/L	50	37.8	76	70-130	
Fluorene	ug/L	50	38.1	76	70-130	
Indeno(1,2,3-cd)pyrene	ug/L	50	35.4	71	70-130	
Naphthalene	ug/L	50	34.9	70	70-130	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

LABORATORY CONTROL SAMPLE: 752152

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenanthrene	ug/L	50	38.8	78	70-130	
Pyrene	ug/L	50	40.5	81	70-130	
2-Fluorobiphenyl (S)	%			76	10-120	
Nitrobenzene-d5 (S)	%			78	10-120	
Terphenyl-d14 (S)	%			85	10-116	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 752153 752154

Parameter	Units	92116719019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1-Methylnaphthalene	ug/L	ND	125	125	90.5	99.8	72	80	70-130	10	30	
2-Methylnaphthalene	ug/L	ND	125	125	89.2	98.0	71	78	70-130	9	30	
Acenaphthene	ug/L	ND	125	125	94.9	101	76	81	70-130	7	30	
Acenaphthylene	ug/L	ND	125	125	92.5	98.9	74	79	70-130	7	30	
Anthracene	ug/L	ND	125	125	98.5	105	79	84	70-130	7	30	
Benzo(a)anthracene	ug/L	ND	125	125	95.3	103	76	82	70-130	8	30	
Benzo(a)pyrene	ug/L	ND	125	125	90.9	97.3	73	78	70-130	7	30	
Benzo(b)fluoranthene	ug/L	ND	125	125	92.7	99.4	74	79	70-130	7	30	
Benzo(g,h,i)perylene	ug/L	ND	125	125	94.1	96.2	75	77	70-130	2	30	
Benzo(k)fluoranthene	ug/L	ND	125	125	91.8	101	73	81	70-130	10	30	
Chrysene	ug/L	1.8J	125	125	97.3	105	76	83	70-130	8	30	
Dibenz(a,h)anthracene	ug/L	ND	125	125	94.1	97.4	75	78	70-130	3	30	
Fluoranthene	ug/L	ND	125	125	95.3	112	76	89	70-130	16	30	
Fluorene	ug/L	ND	125	125	95.7	101	77	81	70-130	5	30	
Indeno(1,2,3-cd)pyrene	ug/L	ND	125	125	93.9	96.6	75	77	70-130	3	30	
Naphthalene	ug/L	ND	125	125	88.4	95.0	71	76	70-130	7	30	
Phenanthrene	ug/L	ND	125	125	94.7	103	76	82	70-130	8	30	
Pyrene	ug/L	ND	125	125	97.4	97.8	78	78	70-130	0	30	
2-Fluorobiphenyl (S)	%						68	74	10-120			
Nitrobenzene-d5 (S)	%						74	79	10-120			
Terphenyl-d14 (S)	%						79	79	10-116			

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: PMST/4704 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92116719006, 92116719007, 92116719008, 92116719009, 92116719010, 92116719011, 92116719012

SAMPLE DUPLICATE: 752078

Parameter	Units	92116692012 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	8.6	9.1	6	25	

SAMPLE DUPLICATE: 752079

Parameter	Units	92116627003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.9	13.3	5	25	

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QUALITY CONTROL DATA

Project: RHODES WAY NORTH
Pace Project No.: 92116719

QC Batch: PMST/4706
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92116719013

SAMPLE DUPLICATE: 752696

Parameter	Units	92116848001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	0.22	0.22	1	25	

SAMPLE DUPLICATE: 752698

Parameter	Units	92116841004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.3	18.0	2	25	

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QUALIFIERS

Project: RHODES WAY NORTH
Pace Project No.: 92116719

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
P5	The EPA or method required sample preservation degrades this compound, therefore acceptable recoveries may not be achieved in sample matrix spikes.
S2	Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

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www.pacelabs.com

Pace Analytical Services, Inc.
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(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92116719001	**MW-2**	EPA 8011	OEXT/17253	EPA 8011	GCSV/11855
92116719002	**FIELD BLANK**	EPA 8011	OEXT/17253	EPA 8011	GCSV/11855
92116719016	**MW-1**	EPA 8011	OEXT/17253	EPA 8011	GCSV/11855
92116719017	**MW-3**	EPA 8011	OEXT/17253	EPA 8011	GCSV/11855
92116719018	**DUPLICATE**	EPA 8011	OEXT/17253	EPA 8011	GCSV/11855
92116719001	**MW-2**	EPA 3010	MPRP/10403	EPA 6010	ICP/9579
92116719002	**FIELD BLANK**	EPA 3010	MPRP/10417	EPA 6010	ICP/9592
92116719016	**MW-1**	EPA 3010	MPRP/10417	EPA 6010	ICP/9592
92116719017	**MW-3**	EPA 3010	MPRP/10417	EPA 6010	ICP/9592
92116719018	**DUPLICATE**	EPA 3010	MPRP/10417	EPA 6010	ICP/9592
92116719001	**MW-2**	EPA 3010	MPRP/10452	EPA 6010	ICP/9614
92116719002	**FIELD BLANK**	EPA 3010	MPRP/10452	EPA 6010	ICP/9614
92116719016	**MW-1**	EPA 3010	MPRP/10452	EPA 6010	ICP/9614
92116719017	**MW-3**	EPA 3010	MPRP/10452	EPA 6010	ICP/9614
92116719018	**DUPLICATE**	EPA 3010	MPRP/10452	EPA 6010	ICP/9614
92116719006	**SB-1-5**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719007	**SB-2-5**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719008	**SB-3-4**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719009	**SB-5-4**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719010	**SB-6-4**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719011	**SB-7-4**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719012	**DUPLICATE**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719013	**SB-4-4**	EPA 3546	OEXT/17162	EPA 8270 by SIM	MSSV/6196
92116719001	**MW-2**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719002	**FIELD BLANK**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719016	**MW-1**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719017	**MW-3**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719018	**DUPLICATE**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719019	**FIEL BLANK**	EPA 3535	OEXT/17163	EPA 8270	MSSV/6195
92116719001	**MW-2**	EPA 8260	MSV/18852		
92116719002	**FIELD BLANK**	EPA 8260	MSV/18852		
92116719003	**SW-1**	EPA 8260	MSV/18852		
92116719004	**SW-2**	EPA 8260	MSV/18852		
92116719005	**TRIP BLANK**	EPA 8260	MSV/18852		
92116719015	**TRIP BLANK**	EPA 8260	MSV/18852		
92116719016	**MW-1**	EPA 8260	MSV/18859		
92116719017	**MW-3**	EPA 8260	MSV/18852		
92116719018	**DUPLICATE**	EPA 8260	MSV/18859		
92116719019	**FIEL BLANK**	EPA 8260	MSV/18852		
92116719006	**SB-1-5**	EPA 8260	MSV/18867		
92116719007	**SB-2-5**	EPA 8260	MSV/18867		
92116719008	**SB-3-4**	EPA 8260	MSV/18867		
92116719009	**SB-5-4**	EPA 8260	MSV/18880		

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Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
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(336)623-8921

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(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: RHODES WAY NORTH
Pace Project No.: 92116719

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92116719010	**SB-6-4**	EPA 8260	MSV/18867		
92116719011	**SB-7-4**	EPA 8260	MSV/18867		
92116719012	**DUPLICATE**	EPA 8260	MSV/18867		
92116719013	**SB-4-4**	EPA 8260	MSV/18867		
92116719006	**SB-1-5**	ASTM D2974-87	PMST/4704		
92116719007	**SB-2-5**	ASTM D2974-87	PMST/4704		
92116719008	**SB-3-4**	ASTM D2974-87	PMST/4704		
92116719009	**SB-5-4**	ASTM D2974-87	PMST/4704		
92116719010	**SB-6-4**	ASTM D2974-87	PMST/4704		
92116719011	**SB-7-4**	ASTM D2974-87	PMST/4704		
92116719012	**DUPLICATE**	ASTM D2974-87	PMST/4704		
92116719013	**SB-4-4**	ASTM D2974-87	PMST/4706		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 3

1586294

Section A Required Client Information:

Company: ECS
Address: 13904 S. POINT BLVD
CHARLOTTE NC
Email To: MCLEA@ECSCONSULT.COM
Phone: 704-583-2711 Fax:
Requested Due Date/TAT: 5-DAY

Section B Required Project Information:

Report To: Michael CLEA
Copy To:
Purchase Order No.: 14-215778
Project Name: RHODES WAY NORTH
Project Number: 14-215778

Section C Invoice Information:

Attention: SUE SMEETON
Company Name: ECS
Address: AGAWAM MA
Pace Quote Reference:
Pace Project Manager: KEVIN HERRING
Pace Profile #: 2291-7, 3, 4

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260 BTEX + MTBE	1,2 DCA	Oxygenates	Ethanol	8011 EDB	8270 PAHs	TOTAL LEAD	Dissolved Lead	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-#2	WT	G			4/17	1100		10			X	X					X	X	X	X	X	X	X	X		001
2	FIELD BLANK						1025		9									X	X	X	X	X	X	X	X		002
3	SW-1						1135		3									X									003
4	SW-2						1145		3									X									004
5	TRIP BLANK								3									X									005
6																											
7																											
8																											
9																											
10																											
11																											
12																											

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Cooler 1 of 5	Phil Pike / ECS	4/17/12		ECS office	4/18/12					
	ECS office			P Moody - Pace	4-18-12	14:00				
	P Moody	4-18-12	16:35		4/18/12	1638	2.9	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Phil Pike
SIGNATURE of SAMPLER: Phil Pike
DATE Signed (MM/DD/YY): 4/17/12

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-May-2007

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 2 of 3

1586296

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Michael Clea	Attention: Sue Streeter
Address: 13504 S. Point Blvd	Copy To:	Company Name: ECS
Charlotte NC		Address: Agawam MA
Email To: MClea@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583 2761 Fax:	Project Name: Rhodes Way North	Pace Project Manager: Kevin Herring
Requested Due Date/TAT: 5-DAY	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: SC

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX MEN	8270 PAHs	TPH-DRO	Grainsize/Hydrometer	TOC	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-1-5	SL	G			4/16	1300		5										X	X					006
2	SB-2-5						1315		5										X	X					007
3	SB-3-4						1335		5										X	X					008
4	SB-4-4						1325		7										X	X	X	X			013
5	SB-5-4						1345		5										X	X					009
6	SB-6-4						1400		5										X	X					010
7	SB-7-4						1410		5										X	X					011
8	SB-8-4						1425		1										~~X~~	~~X~~			X		014
9	Field Blank	WT					1845		4									4/16	X	X					019 ~~012~~ 4/18
10	Duplicate	SL					—		5										X	X					012
11	Trip Blank								2										X						015
12																									

92116719

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Cooler 2085	Phil Pike / ECS	4/17/12		ECS Office	4/17/12		
	ECS office			G Moody Pace	4-18-12	14:00	
	G Moody	4-18-12	16:35	[illegible]	4/18/12	16:35	1.0 yes / no yes

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: Phil Pike

DATE Signed (MM/DD/YY): 4/16/12

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 3 of 3

1586295

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: ECS	Report To: Michael CLEA	Attention: SUE STREETER
Address: 13504 S. POINT BLVD CHARLOTTE NC	Copy To:	Company Name: ECS
		Address: AGAWAM MA
Email To: M.CLEA@ECSconsult.com	Purchase Order No.: 14-215778	Pace Quote Reference:
Phone: 704-583274 Fax:	Project Name: RHODESWAY NORTH	Pace Project Manager: Kevin Herrin
Requested Due Date/TAT: 5-DAY	Project Number: 14-215778	Pace Profile #:

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: _____

Section D Required Client Information

Matrix Codes MATRIX / CODE: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	8260 BTEX + NAPH	1,2 DCA	Oxygenates	ETHANOL	8011 EDB	8270 PAHS	TOTAL LEAD	Dissolved lead	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-1	WT	G			4/17	~~910~~ 955		10			X	X						X	X	X	X	X	X	X	X		016
2	MW-3	↓	↓			↓	910		10			↓	↓						X	X	X	X	X	X	X	X		017
3	Duplicate	↓	↓			↓	—		10			↓	↓						X	X	X	X	X	X	X	X		018
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

9211679

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Cooler 4 of 5	Phil Pike / ECS	4/17/12	~~16:15~~	ECS Office	4/17/12	~~16:15~~				
	ECS OFFICE			G Moody Pace	4-18-12	14:00				
	G Moody	4-18-12	16:35	[illegible]	4/18/12	16:35	1.0	yes	no	yes

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Phil Pike

SIGNATURE of SAMPLER: [signature] for

DATE Signed (MM/DD/YY): 4/17/12

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15 May 2007

Pace Analytical	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: January 30, 2012 Page 1 of 2
	Document Number: **F-CHR-CS-03-rev.06**	Issuing Authority: Pace Huntersville Quality Office

Client Name: ECS Project # 92116719

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1101 T1102 **Type of Ice:** Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor **T1101**: No Correction **T1102**: Subtract 1.2°C

Corrected Cooler Temp.: 1.0 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: [illegible] 4/18/12

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☑Yes ☐No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☑No ☐N/A	11. ~~+ only 2 pages~~ [illegible] 4/18/12
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. + No time for duplicate J
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed
Samples checked for dechlorination:	☑Yes ☐No ☐N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☑Yes ☐No ☐N/A	16. no date/time
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: [illegible] **Date:** 4/18/12 **SRF Review:** [illegible] **Date:** 4/19/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

SHIELD
ENGINEERING, INC.

April 26, 2012

Mr. Kevin Herring

Subject: **Laboratory Test Results**
Pace Job Number 92116719
Shield Job Number 1100026-01
LRF # 12-082

Dear Mr. Herring:

As requested Shield Engineering Inc., has completed the laboratory testing on the above referenced project. The test results for Grain Size Analysis are attached to this letter.

The laboratory tests were provided in accordance with the applicable ASTM Standards. The test samples were obtained by a representative of Shield Engineering, and then delivered to Shield's Charlotte, North Carolina laboratory for testing.

If you have any questions concerning our test results, please do not hesitate to call our office at (704) 394-6913.

Sincerely,

Shield Engineering, Inc.

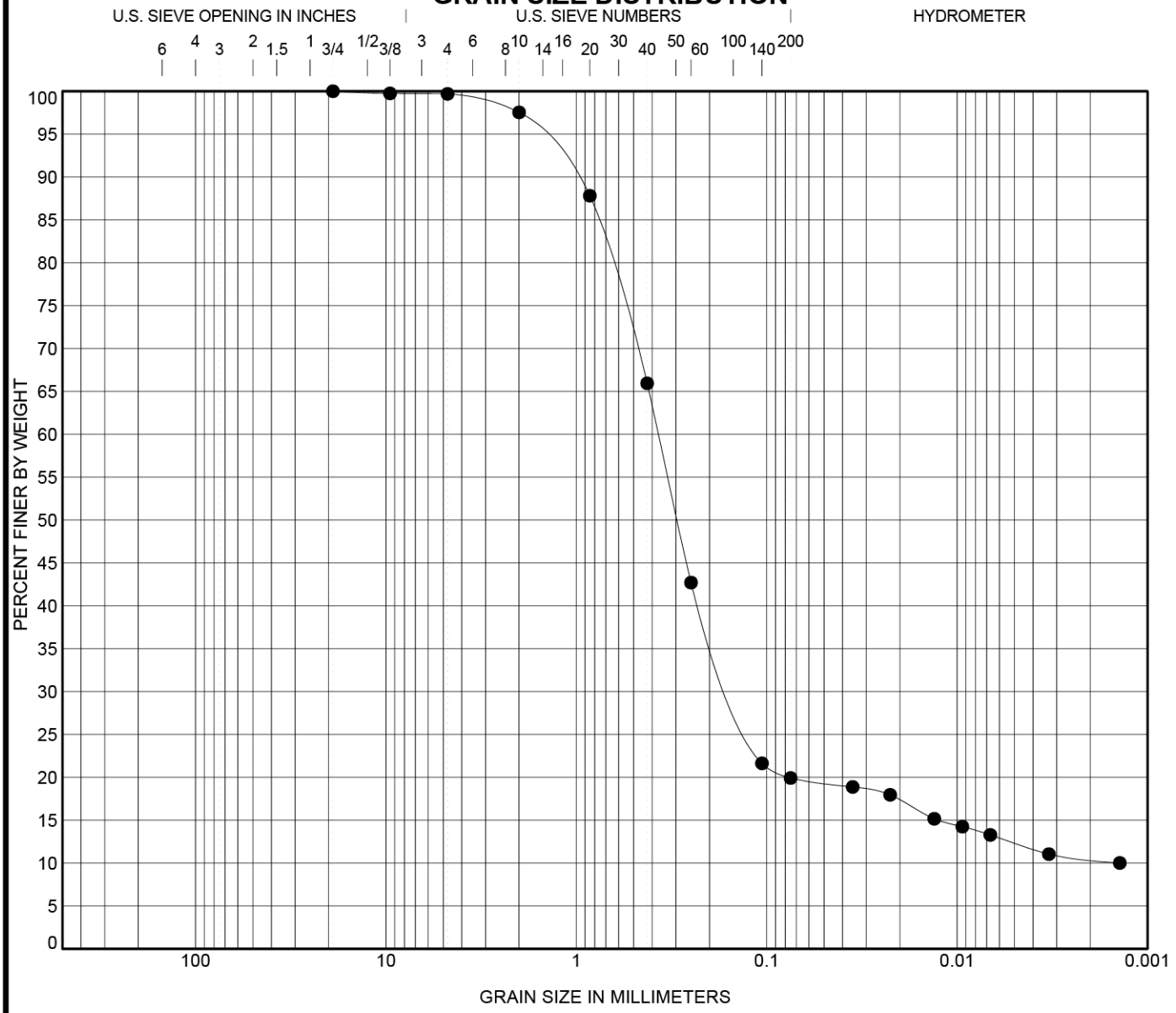
Josh Slusarczyk
Laboratory Manager

4301 Taggart Creek Road
Charlotte, NC 28208

www.shieldengineering.com

Telephone 704.394.6913
Fax 704.394.6968

GRAIN SIZE DISTRIBUTION



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification	Classification	LL	PL	PI	Cc	Cu
●	**SB-4-4 -'**						

	Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**SB-4-4 -'**	**19**	**0.371**	**0.149**		**0.3**	**79.8**	**7.6**	**12.4**

SHIELD ENGINEERING, INC.
4301 Taggart Creek Road
Charlotte, NC 28208
Telephone: 704-394-6913
Toll Free: 800-395-5220
Fax: 704-394-6968

Pace Project No.: 92116719
Pace Lab ID: 92116719013
Pace Analytical
Shield Project No.: 1100026-01

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

April 25, 2012

Kevin Herring
Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville NC 28078

TEL: (704) 875-9092
FAX: (704) 875-9091

RE: 92116719

Dear Kevin Herring: Order No: 1204E99

Analytical Environmental Services, Inc. received 2 samples on 4/20/2012 10:55:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative. AES' certifications are as follows:
-South Carolina Certification number 98016003 for Clean Water Act and for Solid and Hazardous Waste, effective until 6/30/12.

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

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

Sincerely,

Sharissa Hall
Project Manager

1204E99

Chain of Custody

Page 2 of 8

Pace Analytical®
www.pacelabs.com

Workorder: 92116719 **Workorder Name:** RHODES WAY NORTH **Results Requested** 4/25/2012

Report / Invoice To	Subcontract To
Kevin Herring Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092 Email: kevin.herring@pacelabs.com	AES P.O. CHS11119

Item	Sample ID	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Preserved Containers: MeCl	Requested Analysis: DRO	Requested Analysis: TOC	LAB USE ONLY
1	SB-4-4	4/16/2012 13:25	92116719013	Solid	1		X		
2	SB-8-4	4/16/12 1425	92116719014	SOIL	1			X	
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1				4/20/12 10:55
2				
3				

Comments

Cooler Temperature on Receipt 3.6 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

Analytical Environmental Services, Inc **Date:** 25-Apr-12

Client:	Pace Analytical Services, Inc.	**Client Sample ID:**	SB-4-4
Project Name:	92116719	**Collection Date:**	4/16/2012 1:25:00 PM
Lab ID:	1204E99-001	**Matrix:**	Solid

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
DIESEL RANGE ORGANICS SW8015C (SW3550C)								
TPH (Diesel Range Organics)	800	77		mg/Kg-dry	160374	10	04/24/2012 11:15	SN
Surr: Dioctylphthalate	90.7	47.4-128		%REC	160374	1	04/23/2012 21:54	SN
PERCENT MOISTURE D2216								
Percent Moisture	12.7	0		wt%	R219790	1	04/23/2012 17:30	AS

Qualifiers:

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

Analytical Environmental Services, Inc **Date:** 25-Apr-12

Client:	Pace Analytical Services, Inc.	**Client Sample ID:**	SB-8-4
Project Name:	92116719	**Collection Date:**	4/16/2012 2:25:00 PM
Lab ID:	1204E99-002	**Matrix:**	Soil

Analyses	Result	Reporting Limit	Qual	Units	BatchID	Dilution Factor	Date Analyzed	Analyst
Total Organic Carbon SW9060A Modified					**(SW9060 Modified)**			
Total Organic Carbon (TOC)	2330	500		mg/Kg-dry	160513	1	04/23/2012 09:36	GR

Qualifiers:

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

Analytical Environmental Services, Inc.

Sample/Cooler Receipt Checklist

Client Pace Work Order Number 1204E99

Checklist completed by PM T 4/20/12
Signature Date

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

Shipping container/cooler in good condition? Yes ✓ No __ Not Present __

Custody seals intact on shipping container/cooler? Yes __ No __ Not Present ✓

Custody seals intact on sample bottles? Yes __ No __ Not Present ✓

Container/Temp Blank temperature in compliance? (4°C±2)* Yes ✓ No __

Cooler #1 3.6°C Cooler #2 _____ Cooler #3 _____ Cooler #4 _____ Cooler#5 _____ Cooler #6 _____

Chain of custody present? Yes ✓ No __

Chain of custody signed when relinquished and received? Yes __ No ✓

Chain of custody agrees with sample labels? Yes ✓ No __

Samples in proper container/bottle? Yes ✓ No __

Sample containers intact? Yes ✓ No __

Sufficient sample volume for indicated test? Yes ✓ No __

All samples received within holding time? Yes ✓ No __

Was TAT marked on the COC? Yes ✓ No __

Proceed with Standard TAT as per project history? Yes __ No __ Not Applicable ✓

Water - VOA vials have zero headspace? No VOA vials submitted ✓ Yes __ No __

Water - pH acceptable upon receipt? Yes __ No __ Not Applicable ✓

Adjusted? _____ Checked by _____

Sample Condition: Good ✓ Other(Explain) _____

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

See Case Narrative for resolution of the Non-Conformance.

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

\L\Quality Assurance\Checklists Procedures Sign-Off Templates\Checklists\Sample Receipt Checklists\Sample_Cooler_Receipt_Checklist

Analytical Environmental Services, Inc

Date: 25-Apr-12

Client: Pace Analytical Services, Inc.
Project: 92116719
Lab Order: 1204E99

Dates Report

Lab Sample ID	Client Sample ID	Collection Date	Matrix	Test Name	TCLP Date	Prep Date	Analysis Date
1204E99-001A	SB-4-4	4/16/2012 1:25:00PM	Solid	DIESEL RANGE ORGANICS		04/20/2012	04/23/2012
1204E99-001A	SB-4-4	4/16/2012 1:25:00PM	Solid	DIESEL RANGE ORGANICS		04/20/2012	04/24/2012
1204E99-001A	SB-4-4	4/16/2012 1:25:00PM	Solid	PERCENT MOISTURE			04/23/2012
1204E99-002A	SB-8-4	4/16/2012 2:25:00PM	Soil	Total Organic Carbon		04/20/2012	04/23/2012

Analytical Environmental Services, Inc

Date: 25-Apr-12

Client: Pace Analytical Services, Inc.
Project Name: 92116719
Workorder: 1204E99

ANALYTICAL QC SUMMARY REPORT

BatchID: 160374

Sample ID: **MB-160374**	Client ID:				Units: **mg/Kg**			Prep Date: **04/19/2012**		Run No: **219734**
SampleType: **MBLK**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **160374**			Analysis Date: **04/20/2012**		Seq No: **4594542**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	BRL	6.7	0	0	0	0	0	0	0	0
Surr: Dioctylphthalate	2.992	0	3.3	0	90.7	47.4	128	0	0	0

Sample ID: **LCS-160374**	Client ID:				Units: **mg/Kg**			Prep Date: **04/19/2012**		Run No: **219734**
SampleType: **LCS**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **160374**			Analysis Date: **04/20/2012**		Seq No: **4594543**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	26.08	6.7	33.3	2.365	71.2	70	130	0	0	0
Surr: Dioctylphthalate	2.860	0	3.33	0	85.9	70	130	0	0	0

Sample ID: **1204C62-007BMS**	Client ID:				Units: **mg/Kg-dry**			Prep Date: **04/19/2012**		Run No: **219734**
SampleType: **MS**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **160374**			Analysis Date: **04/20/2012**		Seq No: **4594547**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	25.77	6.8	33.95	5.975	58.3	35.2	118	0	0	0
Surr: Dioctylphthalate	3.149	0	3.395	0	92.7	47.4	128	0	0	0

Sample ID: **1204C62-007BMSD**	Client ID:				Units: **mg/Kg-dry**			Prep Date: **04/19/2012**		Run No: **219734**
SampleType: **MSD**	TestCode: **DIESEL RANGE ORGANICS SW8015C**				BatchID: **160374**			Analysis Date: **04/20/2012**		Seq No: **4594548**
Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit Qual
TPH (Diesel Range Organics)	27.49	6.8	33.95	5.975	63.4	35.2	118	25.77	6.44	27.6
Surr: Dioctylphthalate	2.973	0	3.395	0	87.6	47.4	128	3.149	0	0

Qualifiers:

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

Analytical Environmental Services, Inc

Date: 25-Apr-12

Client: Pace Analytical Services, Inc.
Project Name: 92116719
Workorder: 1204E99

ANALYTICAL QC SUMMARY REPORT

BatchID: 160513

Sample ID: **MB-160513**	Client ID:	Units: **mg/Kg-dry**	Prep Date: **04/20/2012**	Run No: **219864**
SampleType: **MBLK**	TestCode: **Total Organic Carbon SW9060A Modified**	BatchID: **160513**	Analysis Date: **04/23/2012**	Seq No: **4597284**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	BRL	500	0	0	0	0	0	0	0	0	

Sample ID: **LCS-160513**	Client ID:	Units: **mg/Kg-dry**	Prep Date: **04/20/2012**	Run No: **219864**
SampleType: **LCS**	TestCode: **Total Organic Carbon SW9060A Modified**	BatchID: **160513**	Analysis Date: **04/23/2012**	Seq No: **4597285**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	2040	500	1950	0	105	70	130	0	0	0	

Sample ID: **1204E99-002ADUP**	Client ID: **SB-8-4**	Units: **mg/Kg-dry**	Prep Date: **04/20/2012**	Run No: **219864**
SampleType: **DUP**	TestCode: **Total Organic Carbon SW9060A Modified**	BatchID: **160513**	Analysis Date: **04/23/2012**	Seq No: **4597291**

Analyte	Result	RPT Limit	SPK value	SPK Ref Val	%REC	Low Limit	High Limit	RPD Ref Val	%RPD	RPD Limit	Qual
Total Organic Carbon (TOC)	2552	500	0	0	0	0	0	2334	8.92	50	

Qualifiers:

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

APPENDIX F

INVESTIGATIVE-DERIVED WASTE MANIFEST

At the time this report was written the complete waste manifests have not been RECEIVED by this office. They shall be forwarded upon receipt.

APPENDIX G

SLUG TEST DATA

SUMMARY of SLUG TEST ANALYSES

SOUTH CAROLINA
Department of Health and Environmental Control (DHEC)

Site Data

SITE ID #: 02567 COUNTY: Colleton

FACILITY NAME: Rhodesway North

Slug Data

See Appendix G Table _____ Figure _____ for a list of all data measurements.
(water level logs, etc.) (Complete as appropriate).

Water Level Recovery Data was measured by Insitu mini troll
(Hermit Data Logger, Manually with Water Level Indicator, etc.) (List Method)

Complete the following table for each well tested.
COMPLETE A SECOND SHEET IF MORE THAN FOUR WELLS ARE TESTED.

Slug Test Conducted in well(s) Number	MW-2	MW-3		
Initial Rise/Drawdown in well (feet)	1.599	1.431		
Radius of Well Casing (feet)	0.083	0.083		
Effective Radius of Well (feet)	0.25	0.25		
Static Saturated Aquifer Thickness (feet)	100.0	100.0		
Length of Well Screen (feet)	10	10		
Static Height of Water Column in Well (feet)	8.15	8.13		

Calculations

See Appendix G Table _____ Figure _____ for calculations. (Complete as appropriate).
The method for aquifer calculations was Bouwer-Rice (I.e. Bouwer-Rice, Cooper, etc.)
Calculated values by well were as follows:

Slug Test Conducted in well(s) number	MW-2	MW-3		
Hydraulic Conductivity (ft/day)	0.6108	2.4110		

Thickness of the aquifer used to calculate hydraulic conductivity was 100.00 feet.
The aquifer is _____ confined ____ semi-confined X water table.

The estimated seepage velocity is 5.89 and 23.26 feet/year based on
a hydraulic conductivity of 0.6108 , 2.4110 a hydraulic gradient of 0.00608 and
a porosity of 23 per cent for a Silty Sand soil (list type).

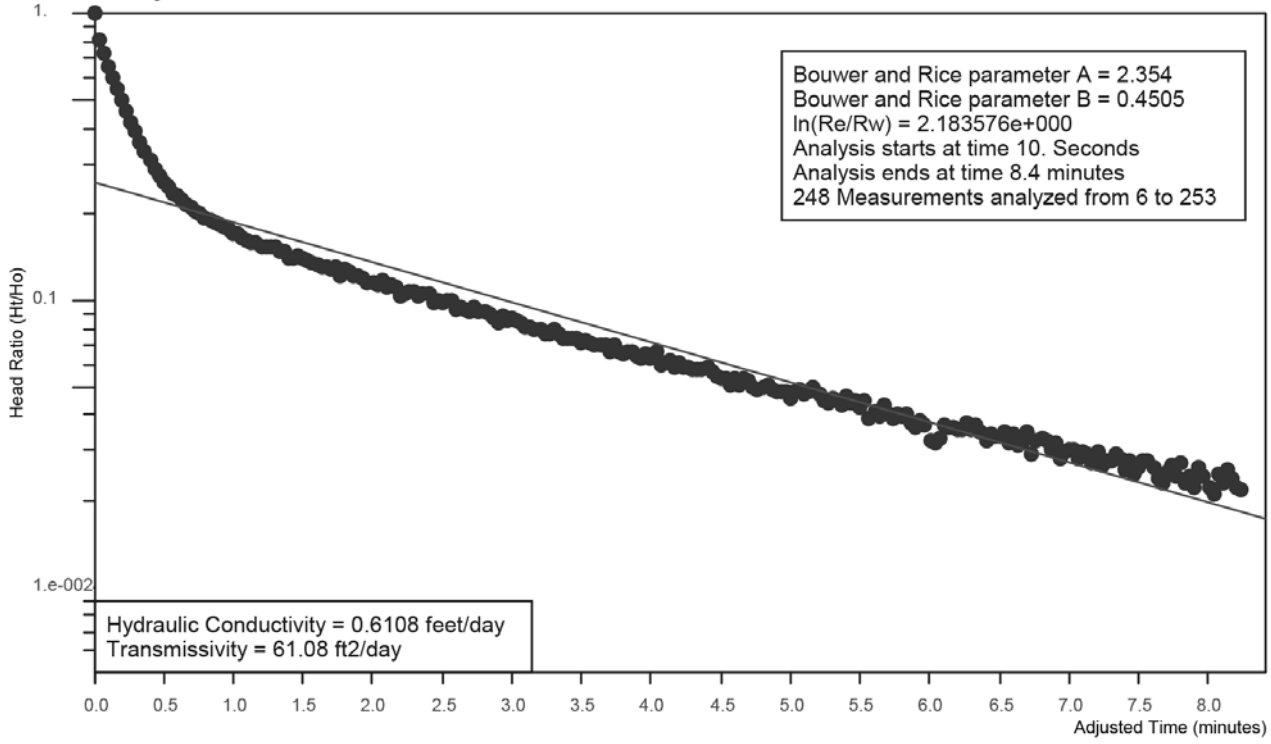
SUMMARY of SLUG TEST

Slug Test 4/17/12

Bouwer and Rice Graph

Rhodesway North Walterboro, SC

MW-2



Project Number: 14-215778 for Rhodes Oil Company

Ho is 1.599 feet at 10. Seconds

Slug Test

Site Name:	Rhodesway North
Location:	Walterboro, SC
Test Date:	4/17/12
Client:	Rhodes Oil Company
Project Number:	14-215778

Well Label:	MW-2
Aquifer Thickness:	100. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	3.25 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	8.15 feet
Anisotropy Ratio:	1.
Time Adjustment:	10. Seconds

Test starts with trial 5
There are 253 time and drawdown measurements
Maximum head is 1.599 feet
Minimum head is -3.372e-002 feet

Trial	Time (Seconds)	Adjusted Time (Seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-10.	-3.372e-002	-3.372e-002	-2.109e-002
2	2.001	-7.999	-1.491e-002	-1.491e-002	-9.325e-003
3	4.001	-5.999	-1.523e-002	-1.523e-002	-9.525e-003
4	6.001	-3.999	-1.598e-002	-1.598e-002	-9.994e-003
5	8.001	-1.999	-1.734e-002	-1.734e-002	-1.084e-002
6	10.	0.	1.599	1.599	1.
7	12.	2.	1.301	1.301	0.8136
8	14.	4.	1.164	1.164	0.728
9	16.	6.	1.05	1.05	0.6567
10	18.	8.	0.952	0.952	0.5954
11	20.	10.	0.8706	0.8706	0.5445
12	22.	12.	0.7985	0.7985	0.4994
13	24.	14.	0.7278	0.7278	0.4552
14	26.	16.	0.6738	0.6738	0.4214
15	28.	18.	0.6194	0.6194	0.3874
16	30.	20.	0.5695	0.5695	0.3562
17	32.	22.	0.5305	0.5305	0.3318
18	34.	24.	0.4954	0.4954	0.3098
19	36.	26.	0.4585	0.4585	0.2867
20	38.	28.	0.4334	0.4334	0.271
21	40.	30.	0.4176	0.4176	0.2612
22	42.	32.	0.3975	0.3975	0.2486
23	44.	34.	0.3773	0.3773	0.236
24	46.	36.	0.3709	0.3709	0.232
25	48.	38.	0.3558	0.3558	0.2225
26	50.	40.	0.3457	0.3457	0.2162
27	52.	42.	0.3371	0.3371	0.2108
28	54.	44.	0.3288	0.3288	0.2056
29	56.	46.	0.3227	0.3227	0.2018
30	58.	48.	0.3113	0.3113	0.1947
31	60.	50.	0.3068	0.3068	0.1919
32	62.	52.	0.3025	0.3025	0.1892
33	64.	54.	0.2942	0.2942	0.184
34	66.	56.	0.2896	0.2896	0.1811

35	68.	58.	0.2827	0.2827	0.1768
36	70.	60.	0.2762	0.2762	0.1727
37	72.	62.	0.2725	0.2725	0.1704
38	74.	64.	0.2661	0.2661	0.1664
39	76.	66.	0.2619	0.2619	0.1638
40	78.	68.	0.2574	0.2574	0.161
41	80.	70.	0.2571	0.2571	0.1608
42	82.	72.	0.2476	0.2476	0.1548
43	84.	74.	0.2463	0.2463	0.154
44	86.	76.	0.2481	0.2481	0.1552
45	88.	78.	0.2446	0.2446	0.153
46	90.	80.	0.2396	0.2396	0.1498
47	92.	82.	0.2393	0.2393	0.1497
48	94.	84.	0.2269	0.2269	0.1419
49	96.	86.	0.227	0.227	0.142
50	98.	88.	0.2273	0.2273	0.1422
51	100.	90.	0.2271	0.2271	0.142
52	102.	92.	0.2218	0.2218	0.1387
53	104.	94.	0.2184	0.2184	0.1366
54	106.	96.	0.215	0.215	0.1345
55	108.	98.	0.2102	0.2102	0.1315
56	110.	100.	0.2083	0.2083	0.1303
57	112.	102.	0.2059	0.2059	0.1288
58	114.	104.	0.2085	0.2085	0.1304
59	116.	106.	0.1954	0.1954	0.1222
60	118.	108.	0.2047	0.2047	0.128
61	120.	110.	0.2021	0.2021	0.1264
62	122.	112.	0.195	0.195	0.122
63	124.	114.	0.1958	0.1958	0.1225
64	126.	116.	0.1911	0.1911	0.1195
65	128.	118.	0.1865	0.1865	0.1166
66	130.	120.	0.1853	0.1853	0.1159
67	132.	122.	0.1818	0.1818	0.1137
68	134.	124.	0.1871	0.1871	0.117
69	136.	126.	0.18	0.18	0.1126
70	138.	128.	0.1801	0.1801	0.1126
71	140.	130.	0.178	0.178	0.1113
72	142.	132.	0.167	0.167	0.1044
73	144.	134.	0.1697	0.1697	0.1061
74	146.	136.	0.1707	0.1707	0.1068
75	148.	138.	0.1732	0.1732	0.1083
76	150.	140.	0.1663	0.1663	0.104
77	152.	142.	0.168	0.168	0.1051
78	154.	144.	0.1679	0.1679	0.105
79	156.	146.	0.1572	0.1572	9.831e-002
80	158.	148.	0.1606	0.1606	0.1004
81	160.	150.	0.1568	0.1568	9.806e-002
82	162.	152.	0.1609	0.1609	0.1006
83	164.	154.	0.1593	0.1593	9.962e-002
84	166.	156.	0.1501	0.1501	9.387e-002
85	168.	158.	0.1506	0.1506	9.418e-002
86	170.	160.	0.1482	0.1482	9.268e-002
87	172.	162.	0.1462	0.1462	9.143e-002
88	174.	164.	0.151	0.151	9.443e-002
89	176.	166.	0.1465	0.1465	9.162e-002
90	178.	168.	0.1465	0.1465	9.162e-002
91	180.	170.	0.1431	0.1431	8.949e-002

92	182.	172.	0.1383	0.1383	8.649e-002
93	184.	174.	0.135	0.135	8.443e-002
94	186.	176.	0.1421	0.1421	8.887e-002
95	188.	178.	0.1353	0.1353	8.462e-002
96	190.	180.	0.1378	0.1378	8.618e-002
97	192.	182.	0.1372	0.1372	8.58e-002
98	194.	184.	0.1337	0.1337	8.361e-002
99	196.	186.	0.1286	0.1286	8.043e-002
100	198.	188.	0.1296	0.1296	8.105e-002
101	200.	190.	0.1274	0.1274	7.967e-002
102	202.	192.	0.126	0.126	7.88e-002
103	204.	194.	0.1221	0.1221	7.636e-002
104	206.	196.	0.123	0.123	7.692e-002
105	208.	198.	0.1271	0.1271	7.949e-002
106	210.	200.	0.1224	0.1224	7.655e-002
107	212.	202.	0.119	0.119	7.442e-002
108	214.	204.	0.1177	0.1177	7.361e-002
109	216.	206.	0.1177	0.1177	7.361e-002
110	218.	208.	0.1193	0.1193	7.461e-002
111	220.	210.	0.1142	0.1142	7.142e-002
112	222.	212.	0.1169	0.1169	7.311e-002
113	224.	214.	0.1136	0.1136	7.104e-002
114	226.	216.	0.1125	0.1125	7.036e-002
115	228.	218.	0.1127	0.1127	7.048e-002
116	230.	220.	0.112	0.112	7.004e-002
117	232.	222.	0.1069	0.1069	6.685e-002
118	234.	224.	0.1119	0.1119	6.998e-002
119	236.	226.	0.1059	0.1059	6.623e-002
120	238.	228.	0.1051	0.1051	6.573e-002
121	240.	230.	0.1055	0.1055	6.598e-002
122	242.	232.	0.1064	0.1064	6.654e-002
123	244.	234.	0.102	0.102	6.379e-002
124	246.	236.	0.1013	0.1013	6.335e-002
125	248.	238.	0.1036	0.1036	6.479e-002
126	250.	240.	0.1013	0.1013	6.335e-002
127	252.	242.	0.1065	0.1065	6.66e-002
128	254.	244.	9.614e-002	9.614e-002	6.013e-002
129	256.	246.	9.659e-002	9.659e-002	6.041e-002
130	258.	248.	9.811e-002	9.811e-002	6.136e-002
131	260.	250.	9.431e-002	9.431e-002	5.898e-002
132	262.	252.	9.795e-002	9.795e-002	6.126e-002
133	264.	254.	9.369e-002	9.369e-002	5.859e-002
134	266.	256.	9.4e-002	9.4e-002	5.879e-002
135	268.	258.	9.22e-002	9.22e-002	5.766e-002
136	270.	260.	9.204e-002	9.204e-002	5.756e-002
137	272.	262.	9.265e-002	9.265e-002	5.794e-002
138	274.	264.	9.417e-002	9.417e-002	5.889e-002
139	276.	266.	9.053e-002	9.053e-002	5.662e-002
140	278.	268.	8.659e-002	8.659e-002	5.415e-002
141	280.	270.	8.567e-002	8.567e-002	5.358e-002
142	282.	272.	8.598e-002	8.598e-002	5.377e-002
143	284.	274.	8.156e-002	8.156e-002	5.101e-002
144	286.	276.	8.523e-002	8.523e-002	5.33e-002
145	288.	278.	8.112e-002	8.112e-002	5.073e-002
146	290.	280.	8.583e-002	8.583e-002	5.368e-002
147	292.	282.	8.356e-002	8.356e-002	5.226e-002
148	294.	284.	8.023e-002	8.023e-002	5.018e-002

149	296.	286.	7.87e-002	7.87e-002	4.922e-002
150	298.	288.	7.929e-002	7.929e-002	4.959e-002
151	300.	290.	8.156e-002	8.156e-002	5.101e-002
152	302.	292.	7.855e-002	7.855e-002	4.912e-002
153	304.	294.	7.733e-002	7.733e-002	4.836e-002
154	306.	296.	7.719e-002	7.719e-002	4.827e-002
155	308.	298.	7.733e-002	7.733e-002	4.836e-002
156	310.	300.	7.341e-002	7.341e-002	4.591e-002
157	312.	302.	7.657e-002	7.657e-002	4.789e-002
158	314.	304.	7.885e-002	7.885e-002	4.931e-002
159	316.	306.	7.582e-002	7.582e-002	4.742e-002
160	318.	308.	7.627e-002	7.627e-002	4.77e-002
161	320.	310.	7.959e-002	7.959e-002	4.977e-002
162	322.	312.	7.552e-002	7.552e-002	4.723e-002
163	324.	314.	7.172e-002	7.172e-002	4.485e-002
164	326.	316.	7.037e-002	7.037e-002	4.401e-002
165	328.	318.	7.354e-002	7.354e-002	4.599e-002
166	330.	320.	7.189e-002	7.189e-002	4.496e-002
167	332.	322.	6.869e-002	6.869e-002	4.296e-002
168	334.	324.	7.37e-002	7.37e-002	4.609e-002
169	336.	326.	7.004e-002	7.004e-002	4.38e-002
170	338.	328.	7.203e-002	7.203e-002	4.505e-002
171	340.	330.	6.749e-002	6.749e-002	4.221e-002
172	342.	332.	7.127e-002	7.127e-002	4.457e-002
173	344.	334.	6.232e-002	6.232e-002	3.897e-002
174	346.	336.	6.535e-002	6.535e-002	4.087e-002
175	348.	338.	6.369e-002	6.369e-002	3.983e-002
176	350.	340.	6.93e-002	6.93e-002	4.334e-002
177	352.	342.	6.474e-002	6.474e-002	4.049e-002
178	354.	344.	6.262e-002	6.262e-002	3.916e-002
179	356.	346.	6.4e-002	6.4e-002	4.003e-002
180	358.	348.	6.307e-002	6.307e-002	3.944e-002
181	360.	350.	6.414e-002	6.414e-002	4.011e-002
182	362.	352.	5.976e-002	5.976e-002	3.737e-002
183	364.	354.	5.777e-002	5.777e-002	3.613e-002
184	366.	356.	6.093e-002	6.093e-002	3.811e-002
185	368.	358.	5.854e-002	5.854e-002	3.661e-002
186	370.	360.	5.186e-002	5.186e-002	3.243e-002
187	372.	362.	5.124e-002	5.124e-002	3.205e-002
188	374.	364.	5.27e-002	5.27e-002	3.296e-002
189	376.	366.	5.87e-002	5.87e-002	3.671e-002
190	378.	368.	5.777e-002	5.777e-002	3.613e-002
191	380.	370.	5.793e-002	5.793e-002	3.623e-002
192	382.	372.	5.701e-002	5.701e-002	3.565e-002
193	384.	374.	5.656e-002	5.656e-002	3.537e-002
194	386.	376.	5.96e-002	5.96e-002	3.727e-002
195	388.	378.	5.64e-002	5.64e-002	3.527e-002
196	390.	380.	5.838e-002	5.838e-002	3.651e-002
197	392.	382.	5.595e-002	5.595e-002	3.499e-002
198	394.	384.	5.217e-002	5.217e-002	3.263e-002
199	396.	386.	5.46e-002	5.46e-002	3.415e-002
200	398.	388.	5.353e-002	5.353e-002	3.348e-002
201	400.	390.	5.368e-002	5.368e-002	3.357e-002
202	402.	392.	5.595e-002	5.595e-002	3.499e-002
203	404.	394.	5.065e-002	5.065e-002	3.168e-002
204	406.	396.	5.473e-002	5.473e-002	3.423e-002
205	408.	398.	4.989e-002	4.989e-002	3.12e-002

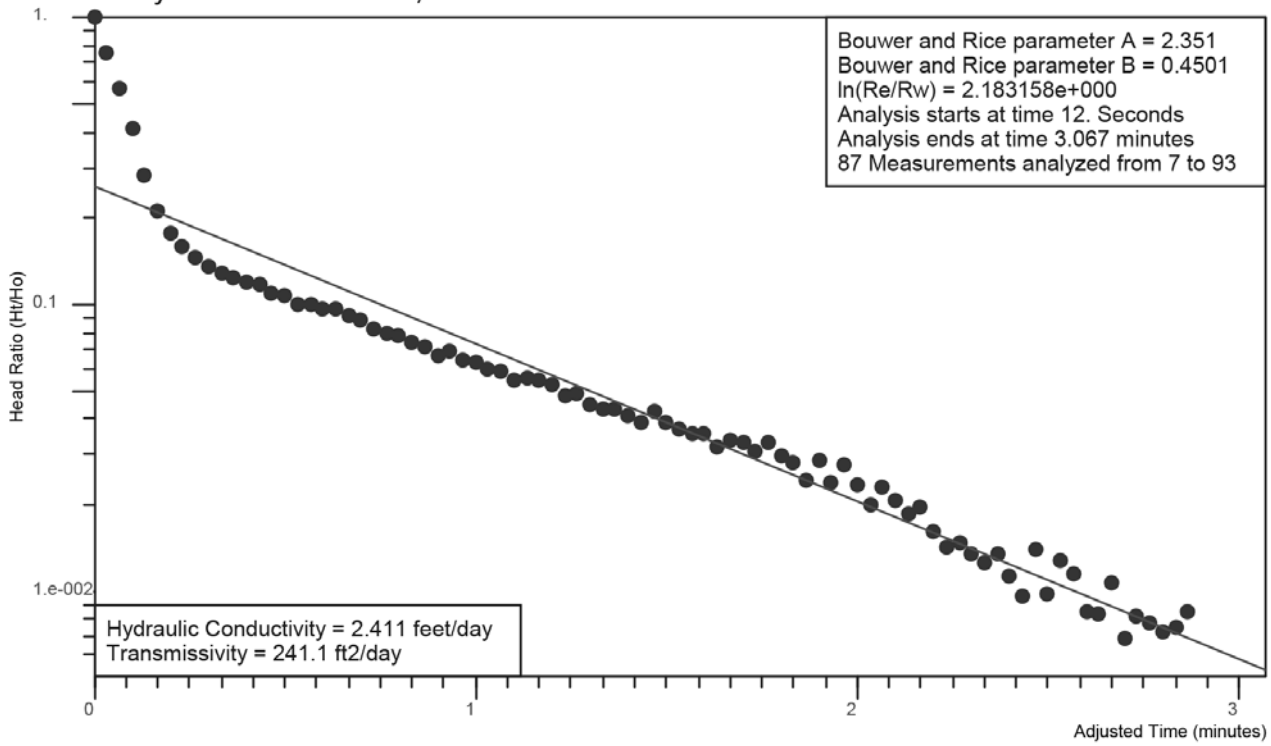
206	410.	400.	5.133e-002	5.133e-002	3.21e-002
207	412.	402.	5.612e-002	5.612e-002	3.51e-002
208	414.	404.	4.655e-002	4.655e-002	2.911e-002
209	416.	406.	5.187e-002	5.187e-002	3.244e-002
210	418.	408.	5.276e-002	5.276e-002	3.3e-002
211	420.	410.	5.155e-002	5.155e-002	3.224e-002
212	422.	412.	4.807e-002	4.807e-002	3.006e-002
213	424.	414.	5.094e-002	5.094e-002	3.186e-002
214	426.	416.	4.505e-002	4.505e-002	2.817e-002
215	428.	418.	4.761e-002	4.761e-002	2.977e-002
216	430.	420.	4.853e-002	4.853e-002	3.035e-002
217	432.	422.	4.837e-002	4.837e-002	3.025e-002
218	434.	424.	4.474e-002	4.474e-002	2.798e-002
219	436.	426.	4.761e-002	4.761e-002	2.977e-002
220	438.	428.	4.64e-002	4.64e-002	2.902e-002
221	440.	430.	4.367e-002	4.367e-002	2.731e-002
222	442.	432.	4.776e-002	4.776e-002	2.987e-002
223	444.	434.	4.275e-002	4.275e-002	2.674e-002
224	446.	436.	4.411e-002	4.411e-002	2.759e-002
225	448.	438.	4.397e-002	4.397e-002	2.75e-002
226	450.	440.	4.625e-002	4.625e-002	2.892e-002
227	452.	442.	4.535e-002	4.535e-002	2.836e-002
228	454.	444.	4.086e-002	4.086e-002	2.555e-002
229	456.	446.	4.381e-002	4.381e-002	2.74e-002
230	458.	448.	3.95e-002	3.95e-002	2.47e-002
231	460.	450.	4.17e-002	4.17e-002	2.608e-002
232	462.	452.	4.411e-002	4.411e-002	2.759e-002
233	464.	454.	4.397e-002	4.397e-002	2.75e-002
234	466.	456.	4.17e-002	4.17e-002	2.608e-002
235	468.	458.	3.814e-002	3.814e-002	2.385e-002
236	470.	460.	3.716e-002	3.716e-002	2.324e-002
237	472.	462.	4.017e-002	4.017e-002	2.512e-002
238	474.	464.	4.26e-002	4.26e-002	2.664e-002
239	476.	466.	3.881e-002	3.881e-002	2.427e-002
240	478.	468.	4.336e-002	4.336e-002	2.712e-002
241	480.	470.	3.692e-002	3.692e-002	2.309e-002
242	482.	472.	3.906e-002	3.906e-002	2.443e-002
243	484.	474.	3.572e-002	3.572e-002	2.234e-002
244	486.	476.	4.2e-002	4.2e-002	2.627e-002
245	488.	478.	3.929e-002	3.929e-002	2.457e-002
246	490.	480.	3.533e-002	3.533e-002	2.21e-002
247	492.	482.	3.389e-002	3.389e-002	2.119e-002
248	494.	484.	3.973e-002	3.973e-002	2.485e-002
249	496.	486.	3.707e-002	3.707e-002	2.318e-002
250	498.	488.	4.109e-002	4.109e-002	2.57e-002
251	500.	490.	3.799e-002	3.799e-002	2.376e-002
252	502.	492.	3.58e-002	3.58e-002	2.239e-002
253	504.	494.	3.526e-002	3.526e-002	2.205e-002

Slug Test 4/17/12

Bouwer and Rice Graph

Rhodesway North Walterboro, SC

MW-3



Project Number: 14-215778 for Rhodes Oil Company

Ho is 1.431 feet at 12. Seconds

Slug Test

Site Name:	Rhodesway North
Location:	Walterboro, SC
Test Date:	4/17/12
Client:	Rhodes Oil Company
Project Number:	14-215778

Well Label:	MW-3
Aquifer Thickness:	100. feet
Screen Length:	10. feet
Casing Radius:	1. Inches
Effective Radius:	3.25 Inches
Static Water Level:	0. feet
Water Table to Screen Bottom:	8.13 feet
Anisotropy Ratio:	1.
Time Adjustment:	12. Seconds

Test starts with trial 6
There are 93 time and drawdown measurements
Maximum head is 1.431 feet
Minimum head is -2.976e-002 feet

Trial	Time (Seconds)	Adjusted Time (Seconds)	Drawdown (feet)	Head (feet)	Head Ratio
1	0.	-12.	-2.976e-002	-2.976e-002	-2.08e-002
2	2.	-10.	-2.086e-002	-2.086e-002	-1.458e-002
3	4.	-8.	-2.476e-002	-2.476e-002	-1.73e-002
4	6.	-6.	-2.145e-002	-2.145e-002	-1.499e-002
5	8.001	-3.999	-1.919e-002	-1.919e-002	-1.341e-002
6	10.	-2.	1.31	1.31	0.9154
7	12.	0.	1.431	1.431	1.
8	14.	2.	1.09	1.09	0.7617
9	16.	4.	0.8155	0.8155	0.5699
10	18.	6.	0.5854	0.5854	0.4091
11	20.	8.	0.4048	0.4048	0.2829
12	22.	10.	0.3028	0.3028	0.2116
13	24.	12.	0.2546	0.2546	0.1779
14	26.	14.	0.2297	0.2297	0.1605
15	28.	16.	0.2078	0.2078	0.1452
16	30.	18.	0.1951	0.1951	0.1363
17	32.	20.	0.1847	0.1847	0.1291
18	34.	22.	0.1784	0.1784	0.1247
19	36.	24.	0.1707	0.1707	0.1193
20	38.	26.	0.1678	0.1678	0.1173
21	40.	28.	0.1566	0.1566	0.1094
22	42.	30.	0.1542	0.1542	0.1078
23	44.	32.	0.1441	0.1441	0.1007
24	46.	34.	0.1439	0.1439	0.1006
25	48.	36.	0.1393	0.1393	9.734e-002
26	50.	38.	0.1391	0.1391	9.72e-002
27	52.	40.	0.1306	0.1306	9.126e-002
28	54.	42.	0.1261	0.1261	8.812e-002
29	56.	44.	0.1177	0.1177	8.225e-002
30	58.	46.	0.1139	0.1139	7.959e-002
31	60.	48.	0.1111	0.1111	7.764e-002
32	62.	50.	0.1056	0.1056	7.379e-002
33	64.	52.	0.1021	0.1021	7.135e-002
34	66.	54.	9.544e-002	9.544e-002	6.669e-002

35	68.	56.	9.862e-002	9.862e-002	6.892e-002
36	70.	58.	9.152e-002	9.152e-002	6.396e-002
37	72.	60.	8.955e-002	8.955e-002	6.258e-002
38	74.	62.	8.579e-002	8.579e-002	5.995e-002
39	76.	64.	8.349e-002	8.349e-002	5.834e-002
40	78.	66.	7.762e-002	7.762e-002	5.424e-002
41	80.	68.	7.929e-002	7.929e-002	5.541e-002
42	82.	70.	7.762e-002	7.762e-002	5.424e-002
43	84.	72.	7.566e-002	7.566e-002	5.287e-002
44	86.	74.	6.932e-002	6.932e-002	4.844e-002
45	88.	76.	6.962e-002	6.962e-002	4.865e-002
46	90.	78.	6.418e-002	6.418e-002	4.485e-002
47	92.	80.	6.221e-002	6.221e-002	4.347e-002
48	94.	82.	6.131e-002	6.131e-002	4.284e-002
49	96.	84.	5.83e-002	5.83e-002	4.074e-002
50	98.	86.	5.511e-002	5.511e-002	3.851e-002
51	100.	88.	6.102e-002	6.102e-002	4.264e-002
52	102.	90.	5.541e-002	5.541e-002	3.872e-002
53	104.	92.	5.253e-002	5.253e-002	3.671e-002
54	106.	94.	5.074e-002	5.074e-002	3.546e-002
55	108.	96.	5.044e-002	5.044e-002	3.525e-002
56	110.	98.	4.546e-002	4.546e-002	3.177e-002
57	112.	100.	4.833e-002	4.833e-002	3.377e-002
58	114.	102.	4.757e-002	4.757e-002	3.324e-002
59	116.	104.	4.409e-002	4.409e-002	3.081e-002
60	118.	106.	4.697e-002	4.697e-002	3.282e-002
61	120.	108.	4.228e-002	4.228e-002	2.955e-002
62	122.	110.	4.034e-002	4.034e-002	2.819e-002
63	124.	112.	3.488e-002	3.488e-002	2.437e-002
64	126.	114.	4.108e-002	4.108e-002	2.871e-002
65	128.	116.	3.412e-002	3.412e-002	2.384e-002
66	130.	118.	3.971e-002	3.971e-002	2.775e-002
67	132.	120.	3.336e-002	3.336e-002	2.331e-002
68	134.	122.	2.884e-002	2.884e-002	2.015e-002
69	136.	124.	3.277e-002	3.277e-002	2.29e-002
70	138.	126.	2.959e-002	2.959e-002	2.068e-002
71	140.	128.	2.687e-002	2.687e-002	1.878e-002
72	142.	130.	2.808e-002	2.808e-002	1.962e-002
73	144.	132.	2.312e-002	2.312e-002	1.616e-002
74	146.	134.	2.023e-002	2.023e-002	1.414e-002
75	148.	136.	2.114e-002	2.114e-002	1.477e-002
76	150.	138.	1.947e-002	1.947e-002	1.361e-002
77	152.	140.	1.812e-002	1.812e-002	1.266e-002
78	154.	142.	1.947e-002	1.947e-002	1.361e-002
79	156.	144.	1.608e-002	1.608e-002	1.124e-002
80	158.	146.	1.373e-002	1.373e-002	9.595e-003
81	160.	148.	2.007e-002	2.007e-002	1.403e-002
82	162.	150.	1.388e-002	1.388e-002	9.7e-003
83	164.	152.	1.841e-002	1.841e-002	1.287e-002
84	166.	154.	1.647e-002	1.647e-002	1.151e-002
85	168.	156.	1.208e-002	1.208e-002	8.442e-003
86	170.	158.	1.192e-002	1.192e-002	8.33e-003
87	172.	160.	1.526e-002	1.526e-002	1.066e-002
88	174.	162.	9.821e-003	9.821e-003	6.863e-003
89	176.	164.	1.162e-002	1.162e-002	8.12e-003
90	178.	166.	1.101e-002	1.101e-002	7.694e-003
91	180.	168.	1.025e-002	1.025e-002	7.163e-003

92	182.	170.	1.072e-002	1.072e-002	7.491e-003
93	184.	172.	1.223e-002	1.223e-002	8.546e-003

APPENDIX H

LOCAL ZONING ORDINANCE

Section 6.4 HIGHWAY COMMERCIAL DISTRICT (HCD)

The Highway Commercial District encourages the development of large commercial buildings, retail centers, hotels, and other similar activities along major thoroughfares and away from residential and other activities that could be adversely affected by the large volumes of traffic these types of uses generate.

6.4.1 Permitted Uses. Retail stores are permitted in the HCD, unless otherwise specified. Other uses permitted outright, or permitted with conditions or as special exceptions in the HCD are shown in Table 12. Uses not listed in this table are not permitted in HCD, but may be allowed by a determination of similarity by the Codes Enforcement Officer as described in Article III, Section 3.4.3.

6.4.2 On-Site Parking. At the time of the construction of any principal building, or when a structural alteration or other changes in a principal building produce an increase in floor area and seating or bed capacity, or when a conversion in use occurs, areas for parking motor vehicles on site are required according to the standards shown in Table 6.4.1.

The Zoning Board of Appeals may grant a reduction in the parking requirements in Table 6.4.1 if it is determined that the reduced number of parking spaces can satisfy demand.

Table 6.4.1 Permitted Uses and Parking Requirements in the Highway Commercial District

Use	Permitted	Conditional Use	Special Exception	Parking Required	Standard
Accessory apartments		X		2 spaces	Per dwelling unit
Agriculture, horticulture, silviculture		X			TBD
Amusement Centers	X			4 spaces	Per 250 sq ft
Amusement parks, miniature golf, driving Ranges	X			1 space	Per 250 sq ft; 1 space/tee; 2 spaces per miniature golf hole
Animal hospital	X			1 space	Per 250 sq ft
Athletic Club, sports lessons	X			1 space	Per 200 sq ft
Automatic teller machines	X			1 space	Per 150 sq ft
Automotive sales, rental, parts & service		X		1 space 4 spaces	Per 150 sq ft Per bay
Bank	X			1 space	Per 150 sq ft
Bar, tavern	X			1 space	Per 4 seats
Barber, beauty shop	X			2 spaces	Per chair
Bottle gas sales, storage, distribution		X		1 space	Per 2000 sq ft And 1-15'x30' Loading space
Bowling alley, skating rinks	X			1 space	Per 250 sq ft
Brew-on-premises store, brew pub, Micro-brewery	X			1 space	Per 3 seats of Capacity

Cabinetry/woodworking shop, restoration	X			1 space	Per 300 sq ft
Café, restaurant, drive-in	X			1 space	Per 3 seats of Capacity, plus 1 space per 150 sq ft of food prep area
Campground, private	X			1 space	Per site
Caterer	X			1 space	Per 150 sq ft
Clinic, public or private	X			1 space	Per 250 sq ft
Commercial dental, medical optical Laboratory	X			1 space	Per 150 sq ft
Community center	X			1 space	Per 300 sq ft
Convenience store with gasoline	X			1 space	Per 250 sq ft Plus up to 5 Tandem lanes
Day care	X			2 spaces	Per classroom, Plus 1 space Per 150 sq ft of Floor space
Dwelling units, single- or multi-family		X		2 spaces	Per dwelling unit
Equipment and material storage yards		X		1 space	Per 3000 sq ft
House of worship		X		1 space	Per 3 seats
Hotel, motel	X			1 space	Per room, plus 1 space per 50 sq ft, plus space for food & beverage facilities
Kennels		X		1 space	Per 250 sq ft
Laundry, self-service	X			1 space	Per 250 sq ft
Mobile home park*		X		1 covered space	Per unit, ½ Uncovered Guest space Per unit and ¼ storage space unit
Mobile home sales		X		1 space	Per 250 sq ft
Mortuary, cemetery, crematorium	X			1 space	Per 50 sq ft of assembly rooms and parlors

Museum	X			1 space	Per 300 sq ft
Nursery, greenhouse (commercial)	X			1 space	Per 2000 sq ft Site area, plus 1-15'x30' loading space
Nursing home, assisted living facility	X			1 space	Per residential or bedroom facility, plus 1 space per 150 sq ft of office space
Open air market, produce market, farmer's Market (permanent and seasonal)		X		1 space	Per 250 sq ft
Park, playground	X			1 space	Per 150 sq ft Of open space
Parking lot	X				
Parking garage, public or private	X				
Pawn shops, currency exchange check Cashing	X			1 space	Per 250 sq ft
Personal and business services	X			1 space	Per 300 sq ft
Professional offices, including medical, Real estate	X			1 space	Per 300 sq ft
Public safety and public/private utility Structures			X	1 space	Per 250 sq ft
Recreational facility		X		1 space	Per 300 sq ft
School of art, dance, music	X			1 space	Per 250 sq ft
Schools, public, private, commercial	X		X	1 space	Per classroom And Admin. Office
Sewerage disposal/treatment plant		X		1 space	Per 250 sq ft
~~Sexually oriented businesses*~~	~~X~~			~~1 space~~	~~Per 250 sq ft~~
Shopping center	X			1 space	Per 200 sq ft
Storage facility, min-warehouse		X		1 space	Per 3000 sq ft
Theatres	X			1 space	Per 3 seats
Telecommunication towers**			X		
Welding shop	X			1 space	Per 300 sq ft

*Subject to the regulations specified in Section 8 of the Zoning Ordinance.
**Subject to the regulations specified in Section 7 of the Zoning Ordinance.

6.4.3 Conditional Uses. The determination of compliance for conditional uses is the responsibility of the Codes Enforcement Officer who may in turn refer the decision to the Planning Commission. Specific conditions for the conditional uses in the HCD are included in Table 6.4.2. All conditions must be met before approval may be issued.

Table 6.4.2 Conditional Uses in the Highway Commercial District (HCD)

Use	Conditions
Accessory apartments	Must be for resident caretaker or manager of permitted use
Agriculture, horticulture, silviculture	No poultry or livestock
Automotive sales, rentals, parts, and service	Outside storage must be adequately screened. No vehicles may be parked outside overnight on the property of automobile service stations or car washes. No noise or light trespass on residential properties.
Bottle gas sales, storage, distribution	Sufficient distance from adjacent uses to assure public safety. Adequate screening and buffers between storage yard/parking lots and residential properties. No light, odor, or noise trespass onto residential properties. No overnight parking of vehicles in locations visible from the street.
Campground, private	Must be adequately buffered and screened from adjacent uses.
Dwelling units, single-family subdivisions or multi-family units	Must be adequately buffered and screened from adjacent uses. Entrance and highway frontage must be landscaped. Internal roads must be paved. Potential traffic congestion at external access points must be mitigated, i.e., traffic lights, etc.
Equipment and material storage yard	Outside storage must be screened sufficiently to provide completely opaque, screening at chest-height. This use cannot be located within 500 feet of another storage yard. No noise, odor, or light trespass on adjacent properties.
House of Worship	Traffic Impacts
Kennels	No noise or odor trespass on adjacent properties. All animals must be kept indoors at night. Facility must be of adequate size to accommodate all animals indoors.
Mobile Home Sales	No structure shall be located within 50 feet of the street right-of-way. Display homes along roadway must be parallel to road and be set up to look like residences, including skirting. Unassembled structures must not be visible from the road. Access roads must be paved at least 50 feet from the street.
Recreation facilities	Adequate screening and buffers between structure/parking lots and adjacent properties. No light or noise trespass onto residential properties. Maximum hours of operation from 10am until midnight if near residential properties.
Sewerage disposal/treatment plant	Facility must be screened sufficiently to provide completely opaque, screening at chest-height. This use cannot be located within 500 ft of another sewerage disposal/treatment plant. No noise, odor, or light trespass on adjacent properties.

Storage, mini-warehouses	Setbacks to fence line. Sufficient screening of structures/parking lots to not affect adjacent uses, particularly residential. Outside storage must be screened sufficient to provide completely opaque, screening at chest-height. This use cannot be located within 500 feet of another storage/mini-warehouse facility. No noise, odor, or light trespass on adjacent properties. No structure shall be over three stories. No outside storage of vehicles or boats shall be visible from the street.

6.4.4 Special Exceptions. Special exceptions are reviewed by the Board of Zoning Appeals for a determination of conformance (Table 6.4.1). The factors to be reviewed and the process are described fully in Article III. Additional factors or those which should be given special consideration by the Board of Zoning Appeals within the HCD include the following:

1. *Public safety and public utility structures*. In addition to other standards listed in this Ordinance, public safety and utility structures in the HCD shall be adequately landscaped and fenced for safety and neighborhood compatibility.
2. *Public, private and commercial schools*. In addition to the other standards listed in this Ordinance, assembly halls and community centers in the HCD shall be reviewed for traffic and parking impacts and zoning district compatibility.

Table 6.4.3 Special Exceptions

Use	Conditions
Public Safety Public utility structures	Landscaped Fenced
Public, private and Commercial schools	Traffic Impacts Parking Impacts Zoning District Compatibility

Table 6.4.4 Development Standards

Minimum lot size	6,000 sq ft
Minimum lot width	50 ft
Front setback	35 ft
Side setback	0 ft
Corner side yard	20 ft
Rear yard	15 ft
Maximum building size (% if total lot)	45%
Maximum stories	NA

Substandard Lots of Record. Where the owner of a lot at the time of the adoption of this chapter does not own sufficient land to enable him/her to conform to the dimensional requirements of this chapter, such lot may nonetheless be used as a building site, provided that the lot requirements are not reduced below the minimum specified in this chapter by more than twenty (20) percent. The use of substandard lots of record is encouraged, but the setbacks must be approved by the Zoning Board of Appeals. Any lot of record existing at the time of the adoption of this chapter, which has a lot area which is less than that required by this chapter, shall be subject to the following exceptions and modifications:

1. The Maximum lot coverage by buildings on such lot, subject to all other requirements, shall not exceed sixty (60) percent.
2. **Adjoining lots**. When two (2) or more adjoining lots with contiguous frontage are in one ownership at any time after the adoption of this chapter and those lots, individually, are smaller in area than required in this chapter, then that group of lots shall be considered as a single lot or several lots of minimum permitted area for the district in which they are located. In no case of adjoining lots may more that one (1) combined lot be divided so as to result in lots containing less than the minimum permitted area for the zoning district in which the property is located. If, however, the owner of two (2) or more adjoining lots with insufficient land dimensions decides to build on or sell off these lots he must first combine the lots to comply with the requirements of this chapter. Any lot requiring waivers below the twenty (20) percent minimum set forth in this section may be approved by the Zoning Board of Appeals provided that further decreased dimensional requirements shall conform as closely as possible to the required dimensions.

6.4.5 Parking. Parking restrictions are noted Table 6.4.1.

6.4.6 Signage. It is the intent of this section to ensure that businesses in the Highway Commercial District shall have the ability to identify their businesses to potential customers.

Signs shall be maintained in good repair at all times and the messages on signs must be current.

General Requirements

A. No sign shall be erected, altered, or reconstructed unless a sign permit has been issued by the City's Code Enforcement Officer. The exception is that one (1) sign real estate marketing sign per street frontage, pertaining to the sale or lease of the premises, is allowed without a permit. The sign shall have a maximum of thirty-two (32) square feet in surface area per side and maximum of five (5) feet high.
B. Signs shall not be permitted where they obstruct motorist vision of pedestrians, regulatory signs, traffic control devices or street signs.
C. Every sign shall be constructed and maintained in a manner consistent with the building code provisions and maintained in good structural condition at all times. The message must be kept current except for historical signs.
D. No sign shall be illuminated by other than a steady, continuous light; neither intermittent nor flashing illumination will be permitted. Illumination shall be located, shielded, and directed so as to not be directly visible from any public street or residentially zoned property at grade level. All artificial illumination shall be so designed, located, shielded and directed as to illuminate only the sign face and to prevent the casting of glare or direct light upon adjacent residential property or streets.
E. Signage on canopies, awnings, or marquees shall be limited to the name of or type of business only, and may not contain any message without permission of the Planning Commission.
F. No signs shall be placed in the Highway Commercial District, except those listed below.
G. **The Planning Commission may approve off-premise signs when they are in the public interest. The Commission may place restrictions or conditions upon the signs. All signs must meet the respective district guidelines. (Amended 06/16/09, Ord. 2007-02, CITY CLERK)**
H. No attention-getting devices, including pennants, streamers, festooned lights, "whirligigs," nor any sign which is designed to be moved by the wind shall be permitted, except once a year for a period not to exceed seven (7) days.
I. One flag display, consisting of three (3) flags, displayed according to proper flag protocol on a maximum of three (3) poles, is permitted for each business property in the IICD.

General Guidelines

A. The scale and proportions of the sign should take into account the scale and proportions of the building on which it is mounted.
B. Size of individual signs should be limited to the extent necessary to prevent them from obscuring or competing with other elements of the building.
C. All signs shall be designed in good taste and protect the character of the neighborhood in which it is placed.
D. The only types of signs that shall be permitted in this district are those listed below:

Types of Signs

A. Wall Signs shall be fixed flat against the wall of a building or on the face of a marquee wall. Signs shall be installed perpendicular to the building façade.

B. Ground-Mounted Signs
Businesses with a minimum building setback of twenty (20) feet from the fronting right-of-way shall be permitted the use of a ground mounted sign in addition to any other permitted signage. The maximum height of such signs shall not exceed twenty (20) feet. The maximum area for such signs shall be no more that thirty-two (32) square feet.

C. Window Signs shall be placed on the interior side of the building. Signs painted on glass windows are allowed, provided that the letter height does not exceed six (6) inches and that only black, bronze, gold or white letter is used.

D. Canopy Signs. Canopy or awning signs shall meet the following criteria:

1. A sign message on a canopy or awning shall contain only the name of the business and/or the type of business, type of goods sold, or services rendered. Each business is permitted up to one (1) sign hung under a canopy or awning provided the message on the sign is perpendicular to the building and the sign is at least eight and one half (8-1/2) feet above the surface of the sidewalk and is no more than four (4) square feet in size. If a wall sign is not used, a business is permitted to use up to one (1) canopy or awning sign.
2. Signage on the canopy or awning sign shall be limited to no greater than one-half (1/2) of the area bounded by the edges of the canopy or awning not including any drip flap or vertical fascia surface. If signage is only found in fringe drip-flap portions of the canopy, the entire portion of said area shall be utilized for signage.

E. Free-standing on-premises signs shall meet the following criteria:

1. Free-standing signs are allowed one (1) square foot of sign face per lineal foot of street frontage for the first one hundred (100) feet; and one half (1/2) square foot of sign for each lineal foot in excess of one hundred (100) feet, up to a maximum of three hundred (300) square feet.
2. One (1) free-standing sign is allowed for each developed site, lot or parcel. Where a site or parcel fronts on more than one (1) street, one (1) additional free-standing sign permitted for each additional street upon which it fronts, provided the additional signs each face different streets.
3. Where two (2) or more detached buildings occupy the *same* lot or parcel, each *may* have one (1) free-standing sign, provided the total area does not exceed the allowable limits specified by the Ordinance, based on the total lineal street frontage of the site or parcel on which they are to be located.
4. Where two (2) or more attached businesses or buildings occupy the same site or parcel, i.e., shopping center, only one (1) free-standing sign for the aggregate businesses shall be permitted per street frontage.

F. Signs not located on the premises of a business shall not be permitted.

G. Non-Conforming Signs. Signs existing at the time of the enactment of this ordinance and not conforming to the provisions herein, but which were constructed in compliance with previous regulations and ordinances, shall be regarded as non-conforming signs and subject to the following regulations:

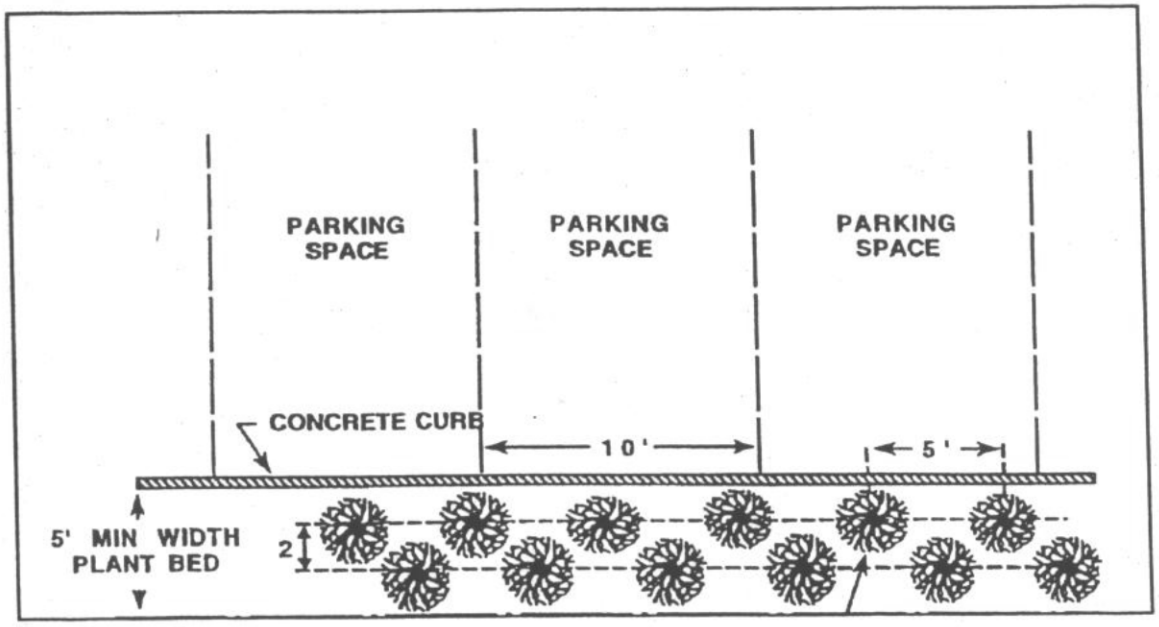
1. Any sign constructed after the adoption date of this ordinance and which is found to exist in violation of this ordinance shall be declared to be illegally non-conforming and shall be removed after thirty (30) days notice. If the owner or lessee fails to remove the sign during the permitted time, then the city or independent contractor secured by the city shall remove the sign and the ensuing charges shall be assessed to the owner or lessee.
2. Non-conforming signs shall not be structurally enhanced or modified so as to prolong the life of the sign.
3. No changes in the existing non-conforming signs shall be allowed except for those repairs which are necessary to keep the sign in good working order.
4. Non-conforming signs must be brought into conformance at the time of an application for site plan approval.
5. All non-conforming signs are required to be brought into compliance within three (3) years from the adoption of this ordinance, or when there is a change in business ownership, type or name, or it the sign becomes damaged to an amount greater than fifty (50) percent of its replacement cost. Signs which have a value greater than two thousand ($2000) dollars at the time of the passage of the ordinance shall be depreciated at the rate of one thousand ($1000) dollars per year and removed when fully depreciated, the value to be determined by the assessed value according to the Colleton County tax assessor's office.

6.4.7 Landscape and Buffers. The landscaping and buffering requirements in the HCD are intended to create optimum spatial separation between businesses without interfering with traffic flow and pedestrian safety.

Landscaping of on-site parking: The landscaping of the off-street parking facilities shall meet the following criteria:

A. A landscape plan shall be submitted with the required site plan.
B. Landscaping shall be located so it does not obscure traffic signs or fire hydrants, or obstruct driver's sight distance within the parking areas and at driveway entrances and exits.
C. All plant material shall be installed to not alter the drainage patterns in the HCD.
D. Landscaping shall be disbursed throughout the parking lot in order to break up large expanses of pavement.
E. Minimum landscaping shall be tow (2) canopy trees per every ten (10) spaces and one hundred (100) square feet of landscaping area per ten (10) spaces.
F. Permeable areas are required to reduce the impacts of storm-water run-off created by development. Paving with impervious surfaces such as asphalt or concrete shall be limited to eighty (80) percent of the parking area surface.

Buffer Areas: Buffer areas are required in the Highway Commercial District to screen developments from adjacent land uses, thereby reducing nuisances and promoting land use compatibility. Buffer areas in the HCD shall be maximum density screen landscaping, shown in the diagram below, located on the outer perimeter of a lot or parcel, extending to the lot or parcel boundary line. The buffer areas shall not be located on any portion of an existing street or right-of-way causing distraction; however, they may occupy part or all of any front, side, rear yard or setback in order to create maximum spatial separation between land uses. Buffer Areas shall be a width of twenty-five (25) feet and include a solid fence to screen the commercial activities from Single Family, Medium Density and High Density Residential areas.



6.4.8 Special Stipulations

Loading. All loading must be done from the side or rear of the Highway Commercial District structure. Loading from the rear of the business shall be screened to prevent intrusion upon neighboring residential districts.

Mobile Home Parks

The intent of the Mobile Home Park (MHP) regulations is to ensure the provision of a high quality residential environment, to meet the needs of inhabitants of mobile home parks, to protect mobile home parks from encroachment by incompatible uses, and to encourage the consolidation of mobile homes into mobile home parks.

Permit Required. In order to qualify for a Mobile Home Park permit, a proposed park must meet the requirements listed below.

Density. Mobile homes at a density not to exceed seven (7) units per acre are permitted.

Accessory Uses. Accessory buildings and accessory uses customarily incidental to any of the above principal uses are permitted. All accessory uses shall comply with the standards of the MHP district. No accessory use shall be established or erected prior to the establishment or erected to the establishment or erection of the principal use to which it is accessory. No existing accessory use may be expanded or extended except in compliance with the regulations of this ordinance.

The following are permitted accessory uses:

1. Private attached and detached garages and carports.
2. Storage sheds or tool rooms.
3. Detached greenhouses.
4. Children's playhouse and play equipment, including basketball apparatus, volleyball nets, swing sets, jungle gyms.
5. Private dish antennas / satellite earth stations under five (5) feet in diameter may be located anywhere within the property lines; larger satellite dishes may not be located in a front or side yard and must be screened from adjacent properties.
6. Private above-grade or below-grade swimming pools and pool houses.

Development Standards

Minimum lot size	5 acres
Minimum lot width	150 ft
Front setback	25 ft
Side setback-Park	25 ft
Rear yard-Park	15 ft
Minimum mobile home space	4000 sq ft
Minimum mobile home space width	40 ft
Interior side yard (mobile home space) setback	15 ft
Common recreational / open space	100 sq ft per home space; 2,500 sq ft minimum per MHP

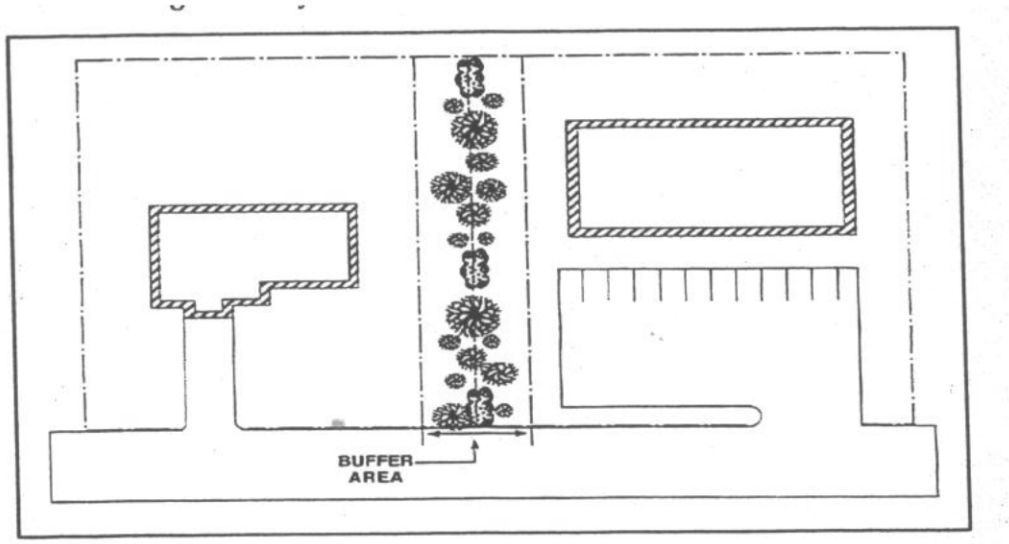
Parking. Two (2) on-site parking spaces shall be provided for each mobile home space.

Signage. The following signs shall be allowed in MHPs and are exempt from permits:

1. House numbers.
2. Election signs.
3. Home occupation signs. One (1) unlighted sign less than two (2) square feet in size mounted on a wall of the principal building.
4. Directional signs.
5. Parking and traffic signs.
6. Temporary construction signs.
7. Real estate marketing signs. One (1) sign per street frontage pertaining to the sale or lease of the premises. The sign shall have a minimum of six (6) square feet in surface area per side and be a maximum of three and one-half (3.5) feet higher.

Landscaped Buffers. The landscaping and buffering requirements in the MHP district are intended to protect and preserve the appearance, character, general health, safety and welfare of the residential neighborhoods subject to the following:

1. The arrangement of trees and shrubs shall be done in a manner that provides separation between mobile home parks and abutting residential, commercial and industrial districts.
2. Front yards and side yards of mobile home parks that front on public streets shall be provided with landscaped buffers, except for the area that is devoted to driveways and off-street parking space.
3. Landscaped buffer areas are required in MHPs to prevent land use incompatibilities. Buffer areas in the MHP shall be medium-density screen landscaping located on the outer perimeter of a lot or parcel, extending to the lot or parcel boundary line; the following diagram illustrates this approach. Buffers shall not be located on any portion of an existing street or right-of-way.



Home Occupations. A home occupation, or home-based business, is that accessory use of a dwelling that shall constitute either entirely or partly the livelihood of a person living in the dwelling. A home occupation shall be allowed by the Codes Enforcement Officer in the MHP, subject to the following:

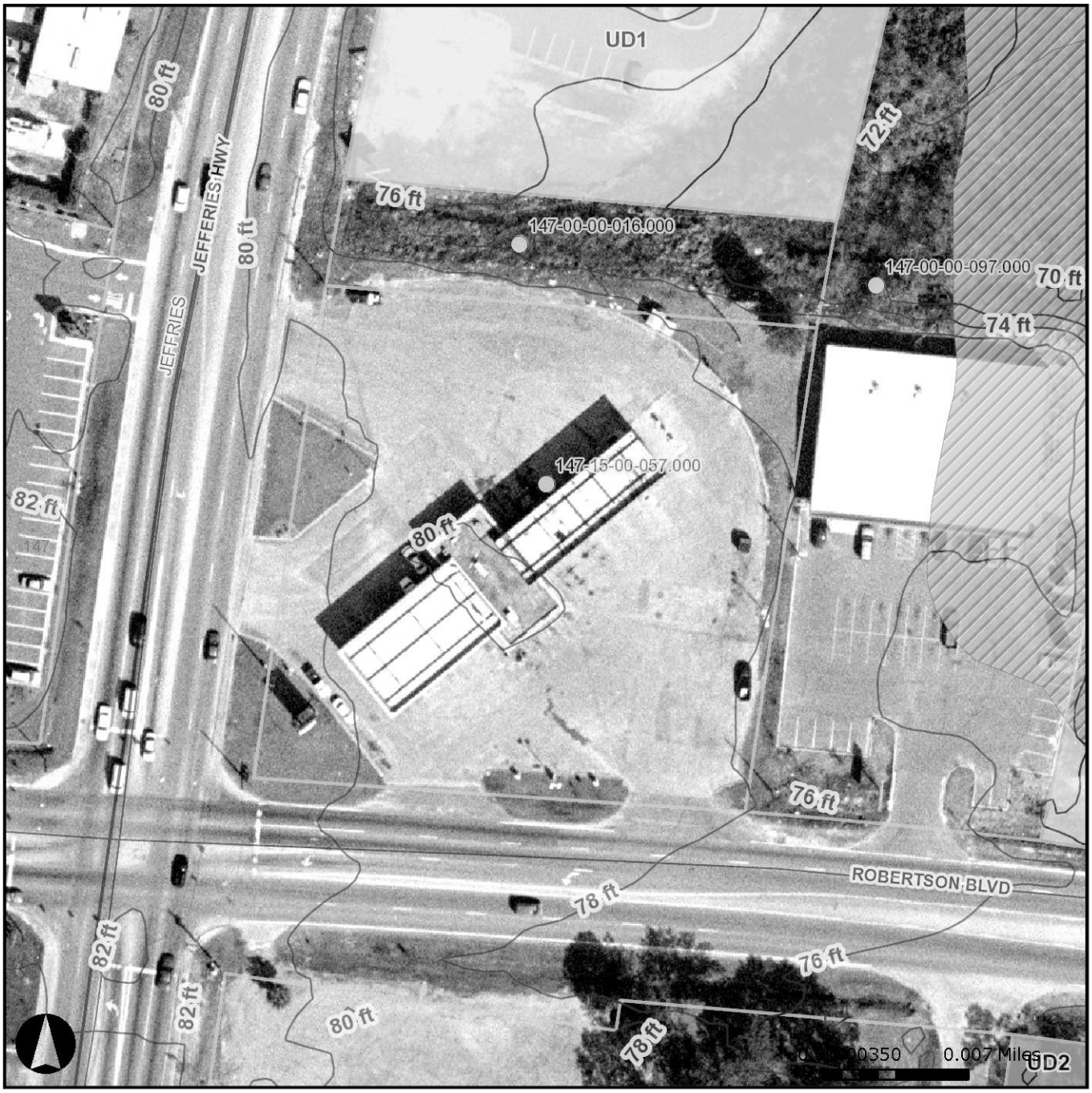
1. The primary use of the structure must remain as a single-family residence. No more than twenty-five (25) percent, to a maximum of seven hundred fifty (750) square feet, whichever is less, shall be used for the purposes of a home occupation.
2. A home occupation shall be conducted solely by resident occupants plus no more than one additional full-time equivalent employee.
3. There shall be no outside storage or processing. All activity must be conducted within a pre-existing structure.
4. The activity produces no alteration or change in the residential character or outside appearance of the primary structure.
5. No goods are located on site except for samples or designs produced on site.

6. The activity shall be subject to all business licenses, revenue collection ordinance and other codes of the City of Walterboro and State of South Carolina.
7. Activities specifically prohibited include repair or service of motor vehicles and other large equipment; service or manufacturing processes which would normally require industrial zoning; any activity which may become a nuisance due to noise, unsightly appearance, heat, glare, vibration, smoke, dust, electrical interference, unhealthy conditions or odor; and any activity which may affect surrounding property.
8. There shall be no exterior display or signage allowed except for one, unlighted sign less than two square feet in size mounted on a wall of the principal building.
9. There is no outside storage of goods or materials.
10. No traffic or parking activity, sewerage or water use shall be generated by the activity in greater volumes than would normally be expected in a residential neighborhood; any need for parking generated by such home occupation shall be met off the street and other than in a required front yard.

APPENDIX I

LOCAL TAX MAP

Colleton County Maps Online



Tax Parcel Locations

County_2ft_Contours

Street Centerlines

Major Roads

Tax Parcel Boundaries

Wetlands

County Zoning

Resource Conservation -1

Resource Conservation -2

County Zoning (continued)

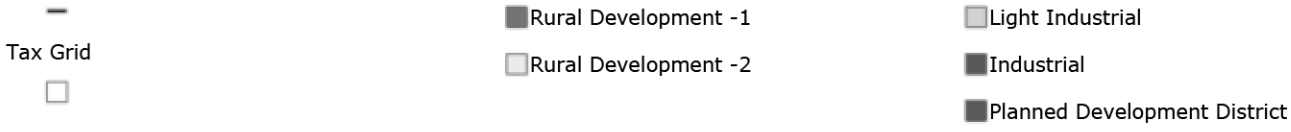
Suburban Residential

Urban Development - 1

Urban Development -2

Community Commercial

Village Commercial


Tax Grid
Rural Development -1
Rural Development -2
Light Industrial
Industrial
Planned Development District

APPENDIX K

CONTRACTOR CHECKLIST (QAPP ADDENDUM K)

Contractor Checklist

For each report submitted to the UST Management Division, the contractor will be required to verify that all data elements for the required scope of work have been provided. For items not required for the scope of work, the N/A box should be checked. For items required and not completed or provided, the No box should be checked and a thorough description of the reason must be provided.

Item #	Item	Yes	No	N/A
1	Is Facility Name, Permit #, and address provided?	✓		
2	Is UST Owner/Operator name, address, & phone number provided?	✓		
3	Is name, address, & phone number of current property owner provided?	✓		
4	Is the DHEC Certified UST Site Rehabilitation Contractor's Name, Address, telephone number, and certification number provided?	✓		
5	Is the name, address, telephone number, and certification number of the well driller that installed borings/monitoring wells provided?	✓		
6	Is the name, address, telephone number, and certification number of the certified laboratory(ies) performing analytical analyses provided?	✓		
7	Has the facility history been summarized?	✓		
8	Has the regional geology and hydrogeology been described?	✓		
9	Are the receptor survey results provided as required?	✓		
10	Has current use of the site and adjacent land been described?	✓		
11	Has the site-specific geology and hydrogeology been described?	✓		
12	Has the primary soil type been described?	✓		
13	Have field screening results been described?	✓		
14	Has a description of the soil sample collection and preservation been detailed?	✓		
15	Has the field screening methodology and procedure been detailed?	✓		
16	Has the monitoring well installation and development dates been provided?	✓		
17	Has the method of well development been detailed?	✓		
18	Has justification been provided for the locations of the monitoring wells?	✓		
19	Have the monitoring wells been labeled in accordance with the UST QAPP guidelines?	✓		
20	Has the groundwater sampling methodology been detailed?	✓		
21	Have the groundwater sampling dates and groundwater measurements been provided?	✓		
22	Has the purging methodology been detailed?	✓		
23	Has the volume of water purged from each well been provided along with measurements to verify that purging is complete?	✓		
24	If free-product is present, has the thickness been provided?			✓
25	Does the report include a brief discussion of the assessment done and the results?	✓		
26	Does the report include a brief discussion of the aquifer evaluation and results?	✓		
27	Does the report include a brief discussion of the fate & transport models used?			✓

Item #	Item	Yes	No	N/A
28	Are the site-conceptual model tables included? (Tier 1 Risk Evaluation)	✓		
29	Have the exposure pathways been analyzed? (Tier 2 Risk Evaluation)			✓
30	Have the SSTLs for each compound and pathway been calculated? (Tier 2 Risk Evaluation)			✓
31	Have recommendations for further action been provided and explained?	✓		
32	Has the soil analytical data for the site been provided in tabular format? (Table 1)	✓		
33	Has the potentiometric data for the site been provided in tabular format? (Table 2)	✓		
34	Has the current and historical laboratory data been provided in tabular format?	✓		
35	Have the aquifer characteristics been provided and summarized on the appropriate form?	✓		
36	Have the Site conceptual model tables been included? (Tier 1 Risk Evaluation)	✓		
37	Has the topographic map been provided with all required elements? (Figure 1)	✓		
38	Has the site base map been provided with all required elements? (Figure 2)	✓		
39	Have the CoC site maps been provided? (Figure 3 & Figure 4)	✓		
40	Has the site potentiometric map been provided? (Figure 5)	✓		
41	Have the geologic cross-sections been provided? (Figure 6)			✓
42	Have maps showing the predicted migration of the CoCs through time been provided? (Tier 2 Risk Evaluation)			✓
43	Has the site survey been provided and include all necessary elements? (Appendix A)	✓		
44	Have the sampling logs, chain of custody forms, and the analytical data package been included with all required elements? (Appendix B)	✓		
45	Is the laboratory performing the analyses properly certified?	✓		
46	Has the tax map been included with all necessary elements? (Appendix C)	✓		
47	Have the soil boring/field screening logs been provided? (Appendix D)	✓		
48	Have the well completion logs and SCDHEC Form 1903 been provided? (Appendix E)	✓		
49	Have the aquifer evaluation forms, data, graphs, equations, etc. been provided? (Appendix F)	✓		
50	Have the disposal manifests been provided? (Appendix G)		✓	
51	Has a copy of the local zoning regulations been provided? (Appendix H)	✓		
52	Has all fate and transport modeling been provided? (Appendix I)			✓
53	Have copies of all access agreements obtained by the contractor been provided? (Appendix J)			✓
54	Has a copy of this form been attached to the final report and are explanations for any missing or incomplete data been provided?	✓		

Explanation for missing and incomplete information?

Contractor Checklist provided as separate document from Tier I report.

Disposal manifest for IDW generated during Tier I has not been received at this time. A copy of the manifest will be forwarded to the SCDHEC upon our receipt.