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SITE: Beaunit
BREAK: 7.8
OTHER: 01

September 1, 1998

Via Courier

Mr. Steven M. Sandler
Remedial Project Manager
U. S. Environmental Protection Agency Region 4
Atlanta Federal Center, 11th Floor
61 Forsyth Street, SW
Atlanta, Georgia 30303-3104

Subject: **Remedial Action Report and Construction Inspection Report**
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site

Dear Mr. Sandler:

On behalf of the Beaunit Lagoon Site Group, we have enclosed four copies of the Remedial Action Report and Construction Inspection Report for Beaunit Corp. Circular Knit & Dyeing Plant NPL Site. We have also forwarded two copies of the subject plan to Mr. Jim Bowman at SCDHEC and two copies of the subject report to Terry Chuhay at CDM FPC. Due to the aggressive schedule of this delivery, the as-built plan will be forwarded to the recipients of this report by September 8, 1998. A signed and sealed Certificate of Completion will also be forwarded with the as-built plan.

Should you have any questions or comments regarding this report, please call me at (678) 969-2494 or Bijoy Ghosh at (678) 969-2405.

Sincerely,

PARSONS ENGINEERING SCIENCE, INC.

T.N. Sadaka

Talal N. Sadaka, P.E.
Construction Manager

c/enc: Jim Bowman - SCDHEC
Terry Chuhay - CDM FPC
Pete Miller - Wilson Sporting Goods
Nancy Prince - El Paso Energy Corporation
Greg Mackin - Collins & Aikman
Michael Elam, Esq. - Rudnick & Wolfe
Jennifer Porter, Esq. - Andrews & Kurth
John Orgain, Esq. - Collins & Aikman
S. Bijoy Ghosh - Parsons ES
Project File (733579)

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Agency Deliverable
- *Remedial Action Report*
- *Construction Inspection Report*

Beaunit Corp. Circular Knit & Dyeing Plant NPL Site

Submitted to:

U.S. Environmental Protection Agency
Region IV
Atlanta, Georgia

Prepared for:

Beaunit Lagoon Site Group

September 1998

PARSONS ENGINEERING SCIENCE, INC.

5390 Triangle Parkway, Suite 100, Norcross, Georgia 30092

733579

REMEDIAL ACTION REPORT
BEAUNIT CORPORATION
CIRCULAR KNIT & DYEING PLANT NPL SITE
FOUNTAIN INN, SOUTH CAROLINA

Prepared for

BEAUNIT LAGOON SITE GROUP

Prepared by

PARSONS ENGINEERING SCIENCE, INC.
5390 Triangle Parkway, Suite 100
Norcross, GA 30092

September 1998

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirements
BLE	Bunnell-Lammons Engineering, Inc.
BLSG	Beaunit Lagoon Site Group
CD	Consent Decree
CDM	Camp Dresser & McKee
CFR	Code of Federal Regulations
CHSP	Construction Health and Safety Plans
CY	Cubic Yards
EPA	Environmental Protection Agency
EPD	Georgia Environmental Protection Division
ES	Engineering-Science
FCI	Final Construction Inspection
GCL	Geosynthetic Clay Liner
HRS	Hazard Ranking System
HSP	Health and Safety Plan
IDW	Investigation-Derived Waste
IQAT	Independent Quality Assurance Team
MCL	Maximum Contaminant Level
MEC	Memphis Environmental Center, Inc.
MES	Murphy Environmental Services

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

NPL	National Priorities List
O&M	Operation and Maintenance
PCB	Polychlorinated Biphenyls
PCI	Pre-Final Construction Inspection
P.E.	Professional Engineer
PNA	Polynuclear Aromatic compound
PSCS	Preliminary Site Characterization Summary
PSVP	Performance Standards Verification Plan
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAC	Remedial Action Contractor
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act of 1976
RD/RA	Remedial Design/Remedial Action
RGO	Remedial Goal Option
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SAL	Soil Action Level

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

SAP	Sampling and Analysis Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SF	Square Feet
SOW	Statement of Work
TC	Toxicity Characteristic
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound

SECTION 1
INTRODUCTION

The United States Environmental Protection Agency (EPA) negotiated a Consent Decree (CD) with Continental Assurance Company, El Paso Natural Gas Company, Collins & Aikman Group, Inc., PepsiCo, Inc., and Wilson Sporting Goods Co. (Settling Defendants or herein referred to as the Beaunit Lagoon Site Group, BLSG) regarding the Remedial Design and Remedial Action (RD/RA) of the Beaunit Corp. Circular Knit and Dyeing Plant Site, Fountain Inn, South Carolina (hereafter referred to as the Site, EPA 1996). According to Task III of the (SOW), and section XIV of the CD, the Participating Respondents are required to submit a Remedial Action Report (RAR) following the pre-certification inspection if they believe that the remedial action (RA) construction has been fully performed and the performance standards have been attained. The RAR and the Construction Inspection Report are presented in this document.

1.1 PURPOSE OF THE REMEDIAL ACTION REPORT

The purpose of the RAR is to document i) the implementation of the RA process conducted at the Site and ii) the compliance with the Record of Decision (ROD, EPA 1995). This RAR includes the following:

- a copy of the Construction Inspection Report (Appendix C);
- a synopsis of the work defined in the SOW and a demonstration in accordance with the Performance Standards Verification Plan (PSVP) that the Performance Standards have been achieved;
- a certification that the RA has been completed in full satisfaction of the requirements of the CD; and
- a description of how Participating Respondents will implement the EPA-approved Operation and Maintenance (O & M) Plan.

1.2 ORGANIZATION OF THE REMEDIAL ACTION REPORT

The RAR contains a total of four sections, including this introductory section. The remainder of this RAR is organized as follows:

Section 2	Remedial Action Construction
Section 3	Certificate of Completion
Section 4	Operation and Maintenance

1.3 SITE LOCATION AND REGULATORY HISTORY

A brief summary of the Site and its regulatory history are presented in this subsection. The information presented herein has been excerpted from ROD; EPA, 1995, and the Remedial Action Work Plan (RAWP) Report (Parsons ES, 1997).

1.3.1 Site Description

The Site is located on the northwest side of Fountain Inn in Greenville County, South Carolina (Figure 1.1). Fountain Inn is located approximately 15 miles Southeast of the City of Greenville. The Site, consisting of the area enclosed by the property line within the existing chain-link fence, is at latitude 34°41'53.8" longitude 82°12'48.8". Access to the Site is restricted because the Site is enclosed within a fence and with a locked gate.

Prior to remediation at the Site, there existed a small lagoon that contained water at approximately 3 feet in depth (which was later discovered to reach up to 10 feet in depth), the remains of a wastewater treatment system (piping, valve boxes), and various types of solid waste that include roofing shingles, tennis ball waste material, and plastic sheeting. The area within the fence had considerable weed and grass growth. There were no major trees located within the site area.

The area immediately around the Site is undeveloped. Single-family detached homes, multi-family apartment complexes, and trailer parks provide housing in the general area surrounding the Site. The nearest residence is a multi-family apartment complex located approximately 100 yards northeast of the Site.

1.3.2 Site Operational History

The Site occupies approximately 1.3 acres and served as the former wastewater lagoon and surroundings for a former knitting, dyeing, and finishing (textile) plant about 400 yards east of the site. A wastewater treatment plant consisting of a modified activated sludge system was built at the Site in 1951. It was constructed to treat industrial wastewater from the textile plant. In 1973, wastewater from the plant was described as passing through an oil separator into the lagoon which had an estimated capacity of 430,100 gallons. A sludge drying bed, located approximately 20 yards north of the lagoon, was used to dry accumulated waste sludge from the treatment operation. It ceased operations in 1977 when the plant shutdown and the adjacent plant connected to municipal sewage. In 1980 the wastewater treatment structures around the lagoon were demolished and the lagoon partially filled in. The Site is currently inactive and enclosed within a secure fence. The adjacent plant currently is operated by Wilson Sporting Goods for the manufacture of tennis balls.

1.3.3 Regulatory History

In the early 1970s citizens began to complain to South Carolina Department of Health and Environmental Control (SCDHEC) regarding the discoloration of the "stream below Beaunit" (probably referring to the unnamed creek and Howards Branch). On June

13, 1985, SCDHEC conducted a site investigation and reported detections of volatile organic compounds in surface water samples collected from the lagoon and the nearby unnamed creek. Polychlorinated Biphenyls (PCBs) and metals were also detected in soil and sediment samples collected from the site. Based on results obtained from SCDHEC's 1985 site investigation, EPA developed a Hazard Ranking System (HRS) score of 32.44 for the Site. In June 1988, EPA proposed to include the site on the National priorities list (NPL). The Site ranked amongst the group 18 sites (HRS scores 32.87 - 31.94) on the NPL.

The United States EPA negotiated an Administrative Order by Consent (AOC) with the BLSG regarding the Beaunit Corp. Circular Knit and Dyeing Plant Site (Site) . The Respondents agreed to comply with the AOC effective February 21, 1992. The BLSG retained Engineering Science to conduct an Remedial Investigation/Feasibility Study (RI/FS) of the Site.

The BLSG submitted a draft RI/FS Work Plan, a draft Sampling and Analysis Plan (SAP), and a draft Health and Safety Plan (HSP) to EPA Region IV on May 29, 1992. EPA's review comments on the draft RI/FS Work Plan and the draft SAP were addressed in a final RI/FS Work Plan and a final SAP which were submitted to EPA Region IV on August 17, 1992. The BLSG submitted a response to comments (i.e., EPA's review comments on the final plans) to EPA Region IV on September 15, 1992. Also, the BLSG submitted a revised final RI/FS Work Plan and a revised final SAP to EPA Region IV on September 30, 1992. EPA approved the revised final RI/FS Work Plan and the revised final SAP on October 9, 1992.

Engineering-Science (ES, later became Parsons ES) conducted initial site surveys (i.e., geophysical and topographical surveys) in April 1992. The information obtained from those surveys was used to prepare the RI/FS Work Plan and the SAP. ES began mobilization on October 12, 1992 for performing the remaining RI field activities at the Site. ES conducted field activities at the Site from October 19, 1992 to December 10, 1992. The Preliminary Site Characterization Summary (PSCS) was submitted to EPA Region IV on February 16, 1993. All information from the PSCS and additional findings on the fate and transport of contaminants are contained in the RI report. The RI report was submitted to EPA and SCDHEC in August 1993. The final Feasibility Study Report was submitted to EPA and SCDHEC in May 1994. The EPA issued the ROD for the Site on September 29, 1995. The RI conclusions, as stated in the ROD, are as follows:

- The potential contaminants of concern for surface soil are polynuclear aromatic compounds (PNAs), arsenic, and manganese.
- The potential contaminants of concern for subsurface soil are PNAs and manganese.
- The potential contaminants of concern for lagoon sediments are PCBs, benzo(a)pyrene, antimony, beryllium, and manganese.

- The potential contaminants of concern for groundwater are barium, chromium, and manganese; none of these metals exceed drinking water standards.
- The rock outcrops and the unnamed creek are the controlling features for the groundwater in the vicinity of the Site; the groundwater flows towards the unnamed creek and has an upward component near the unnamed creek.
- From the standpoint of human health or environmental risk, the four elements of a migration pathway, i.e., an affected source, a transport medium, an exposure pathway, and an exposure source, must occur for the pathway to be considered as complete. The evaluation of contaminant transport from the affected areas at the site indicates that the potential contaminants of concern are not likely to migrate. Therefore, the migration pathways for the potential contaminants of concern at the Site are not likely to be completed.

A CD was negotiated between EPA and the Beaunit Lagoon Site Group in February 1996. Pre-Design Investigation activities were conducted between February 17, 1997, and February 19, 1997, at the Site.

1.4 REMEDY AND PERFORMANCE STANDARDS

The remedy, as presented in the ROD, is comprised of source removal, source control, and compliance monitoring. Major components of the remedy are as follows:

- Source removal at the P5 "Hot Spot" location.
- Containment of soils and sediments contaminated with volatile organic compounds (VOCs) and metals by capping the lagoon area.
- Additional monitoring of groundwater, surface water and stream sediments on a regular schedule to determine the effects of the lagoon cap construction and to evaluate the effectiveness of the cap after construction. Modifications to the frequency or termination of continued monitoring will be determined at the Five Year Review.

1.4.1 Remedy Components

The information presented in Sections 1.4.1 and 1.4.2 has been excerpted from the Remedial Action Work Plan (Parsons EWS, 1997).

*1. **Remedy Component 1 - Excavation, Backfill, Grading, and Cap:** The "Hot Spot" at pipeline location P5 will be excavated and the excavated soil will be sampled and tested to evaluate whether the excavated soil fails the toxicity characteristic (TC). On the basis of the information gained during the RI, excavated soil should pass the TC criteria. If the excavated soil passes the TC criteria, soil will be placed within the Site boundary but outside the lagoon limits for grading. If the excavated soil fails TC criteria, the soil will be transported to an approved Subtitle C landfill for disposal.*

After excavation, four soil samples will be collected from the middle of the sidewalls and one sample from the floor of the excavation for arsenic and nickel analyses. The soil action levels (SALs) for arsenic and nickel in soil at this Site are 3.2 mg/kg and 4.4 mg/kg, respectively. Should any of the collected samples exceed the SALs, additional soil will be excavated around that sample location. The excavated area at P5 will be backfilled and graded to existing topography.

The visible rubbery waste material near the edge of the lagoon area will be removed. The area within the Site boundary will be backfilled and graded to allow for an effective drainage of storm water from the Site and to avoid storm water run-on. A cap will be placed on the graded area. The permeability requirement for the cap shall be 10^{-9} cm/sec. The capped area will be seeded to facilitate a good stand of grass. Erosion and sedimentation controls, e.g., hay bales and silt fencing, will be maintained until a good stand of grass is established.

2. ***Remedy Component 2 - Monitoring:*** *A monitoring program for groundwater, surface water, and stream sediment will be established to identify changes in Site conditions. Site monitoring will allow for 1) an early warning if unacceptable groundwater contamination were to occur, and 2) provide more information on the natural attenuation rates. Under this program, groundwater samples will be collected from five of the seven RI monitoring wells. Surface water and sediment samples will be collected from three locations (upstream of the Site area, just downstream of the MW5 location, and prior to discharge into Howards Branch) along the unnamed creek.*

The post-construction monitoring program will be described in the PSVP. The PSVP will include a Sampling and Analysis Plan for monitoring of groundwater, surface water, and stream sediment. The PSVP has been submitted to EPA and SCDHEC with the Final Design deliverables and the RA plans.

3. ***Remedy Component 3 - Land Use and Deed Restrictions:*** *Land use restrictions will be placed on the property to prevent the Site from being used in a way that may jeopardize the cap's integrity. Deed restrictions will be placed on the property such that the Site (as will be depicted in the Agency Final Remedial Design as the area on which the remedy is constructed) may not be used for residential purposes. Deed restrictions for the Site as defined above will be filed in the county land records within thirty (30) days after EPA approves the Final Remedial Design. Any change in the areal extent of the remedy will involve adjacent landowners. In that event, the BLSG will use its best effort to have deed restrictions placed on the affected property at the earliest possible time.*

1.4.2 Performance Standards

The performance standards for the selected remedy, as presented in the ROD and the PSVP, included both excavation standards and treatment standards. The standards presented below have been excerpted from the ROD, EPA 1995, and the PSVP, Parsons ES, 1997.

1.4.2.1 Excavation Standards

Excavation at P5 shall continue until confirmation sampling of the excavation bottom confirmed that the Soil Action Levels (SALs) for surface soil were achieved. The SALs for surface soil are presented below:

Contaminant	Types of Risk	Remedial Goal Option (RGO)	
		Risk-Based(1)	ARAR-Based
Terrestrial Wildlife			
Arsenic	Noncarcinogenic	0.1 mg/Kg(1)	NA
Nickel	Noncarcinogenic	4.4 mg/Kg(2)	NA

(1) Noncarcinogenic risk-based goal has been calculated based on a hazard index of 1.0. The risk-based goal is lower than average background concentration by at least one order of magnitude. Therefore, the average background concentration of **3.2 mg/kg** will be used as the Remediation Goal for arsenic in surface soil.

(2) Noncarcinogenic risk-based remediation goal has been calculated based on a hazard index of 1.0.

NA - Not applicable

All excavation shall comply with Applicable or Relevant and Appropriate Requirements (ARARs) and state standards. Testing methods approved by the EPA shall be used to determine if the cleanup levels have been achieved.

1.4.2.2 Groundwater Standards

The ARAR-Based goals will be used for post-RA monitoring. For chemicals that do not have an ARAR-Based goal, the lowest quantitation limits achievable by the analytical method will be used for the post-RA monitoring.

Contaminant	Types of Risk	RGO	
		Risk-Based(1)	ARAR-Based
Human Health			
Benzene	Carcinogenic	2 to 200 ug/L	5 ug/L(2)
2-Methylnapththalene	Noncarcinogenic	3 ug/L	NA
Naphthalene	Noncarcinogenic	3 ug/L	NA
Beryllium	Carcinogenic	0.01 to 1 ug/L	4 ug/L(2)
Chromium VI	Noncarcinogenic	40 ug/L	100 ug/L(3)
Manganese	Noncarcinogenic	40 ug/L	200 ug/L(4)

(1) Carcinogenic risk-based remediation goals are based on the risk range 1E-6 to 1E-4. Noncarcinogenic risk-based remediation goals are based on a hazard index of 1.0.

(2) ARAR-Based goal is based on MCL.

(3) ARAR-Based goal is for total chromium.

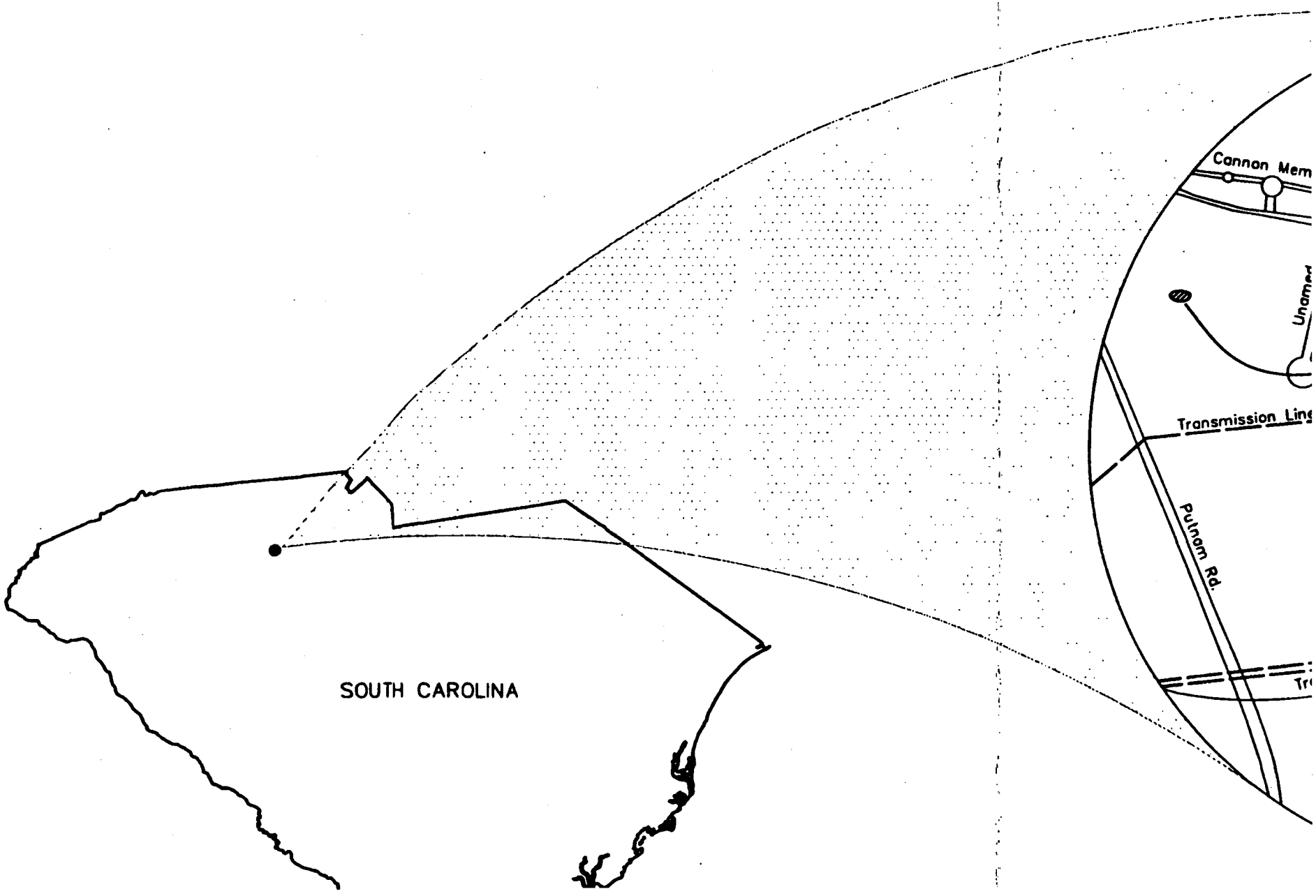
(4) ARAR-Based goal is based on MCLG.

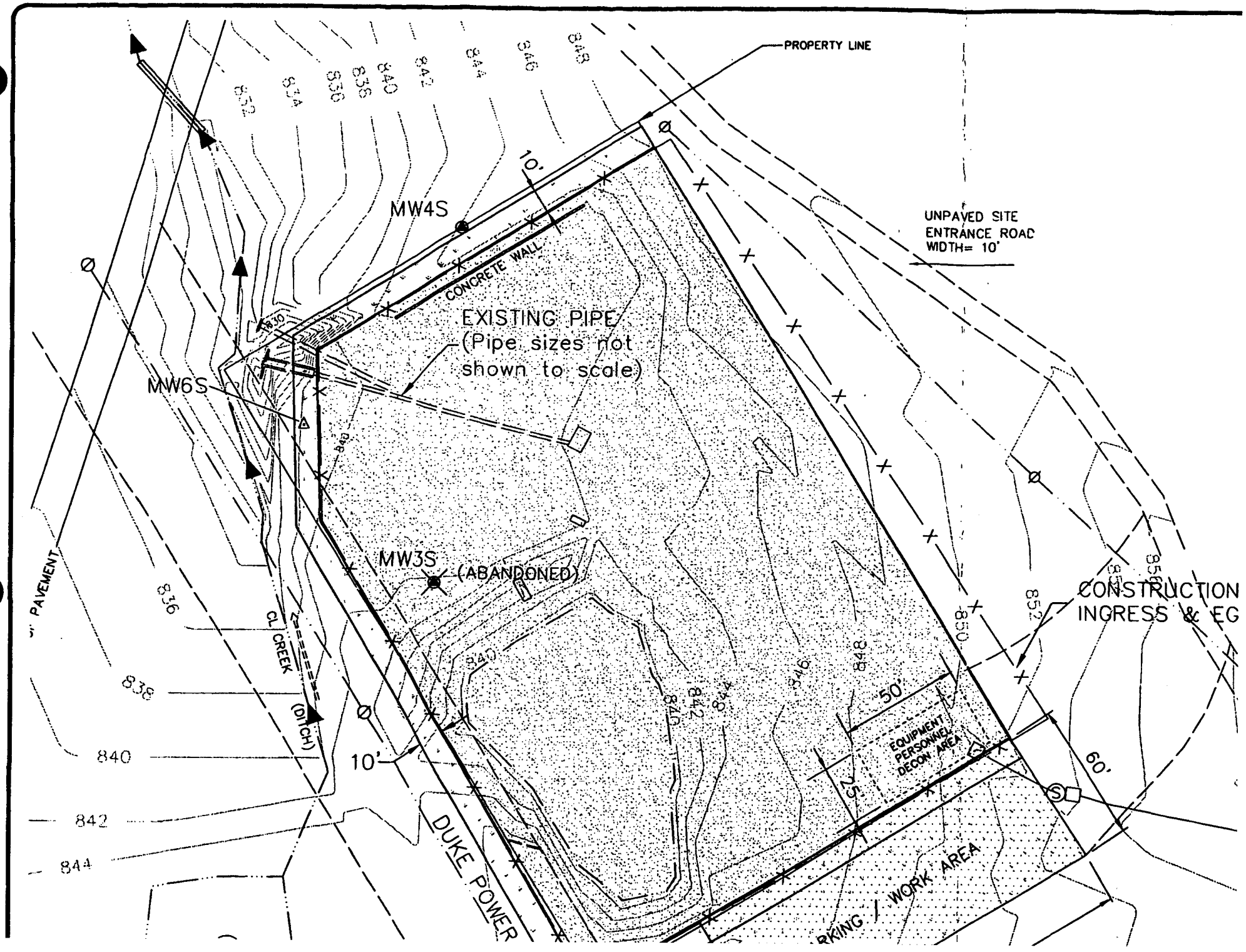
NA - Not applicable

1.4.2.3 Treatment Standards

All waste treatment and disposal shall comply with ARARs, including, but not limited to, Resource Conservation and Recovery Act of 1976 (RCRA) and Land Disposal Restrictions.

FIGURE 1.1
SITE LOCATION
BEAUNIT CORP. CIRCULAR KNIT & DYEING PLANT NPL
FOUNTAIN INN, SOUTH CAROLINA




PROPERTY LINE
UNPAVED SITE
ENTRANCE ROAD
WIDTH= 10'
MW4S
CONCRETE WALL
EXISTING PIPE
(Pipe sizes not
shown to scale)
MW6S
MW3S
(ABANDONED)
CL CREEK
(DITCH)
PAVEMENT
DUKE POWER
CONSTRUCTION
INGRESS & EG
EQUIPMENT
PERSONNEL
DECON AREA
WORK AREA
10'
10'
50'
25'
60'
832
834
836
838
840
842
844
846
848
850
852
856

SECTION 2
REMEDIAL ACTION CONSTRUCTION

This section presents the project organization, identifies key personnel and their responsibilities, and provides a summary of the implementation of the three RA tasks conducted. This section also includes a chronology of remediation activities and a synopsis of the Pre-final Construction Inspections. Additionally a Pictorial Chronology of the RA is presented as Appendix A.

2.1 REMEDIAL ACTION ORGANIZATION AND RESPONSIBILITIES

The organizations that participated in the implementation of the RA are described in this subsection. These organizations had specific functions according to their project responsibilities. Key personnel from each organization are listed in Table 2.1 (Responsibility Matrix) along with addresses and phone numbers. A project organization chart outlining the organizational relationships between the project entities is presented in Figure 2.1.

The project organizations include the following:

- Lead Regulatory Agency - U.S. Environmental Protection Agency (EPA), Region IV.
- State Regulatory Agency - South Carolina Department of Health and Environmental Control (SCDHEC).
- Settling Defendants - Beaunit Lagoon Site Group (BLSG).
- Settling Defendants' Representative/Project Coordinator - Robert (Pete) Miller, Wilson Sporting Goods Co.
- Settling Defendants' Representative/Alternate Project Coordinator - Nancy Prince, El Paso Natural Gas.
- Supervising Contractor- Parsons Engineering Science, Inc. (Parsons ES).
- Independent Quality Assurance Team (IQAT) - (Parsons ES).
- Remedial Action Contractor (RAC) - Murphy Environmental Services (MES).
- Analytical Laboratories - GP Environmental, Quanterra, Memphis Environmental Center (MEC).
- Geotechnical Testing Laboratory - Bunnel-Lammons Engineering, Inc. (BLE).

2.1.1 Regulatory Organizations and Personnel

Figure 2.2 presents the communication and reporting relationships between the various entities involved with the Beaunit Corp. Circular Knit and Dyeing Plant NPL Site RA.

Mr. Steve Sandler, EPA Remedial Project Manager (RPM) was the EPA contact for the Site. He provided oversight of the RA and directed the activities of EPA contractors. Mr. Douglas A. Hopper, CDM Federal Programs Corporation (a subsidiary of Camp Dresser & McKee) provided assistance to Mr. Sandler in performing oversight activities at the Site. Mr. Jim Bowman, SCDHEC Manager, was the State contact for the Site.

2.1.2 Remedial Action Project Coordinator's Team

Mr. Robert (Pete) Miller of Wilson Sporting Goods was the Participating Respondent's Remedial Action Coordinator, and Ms. Nancy Prince was the alternate RA Coordinator. Mr. Miller was the primary contact for EPA and SCDHEC. He directed the RAC (MES), the Supervising Contractor (Parsons ES), the testing laboratories, and the IQAT during the RA.

Parsons ES was retained by The BLSG for Construction Oversight and sampling activities. Parsons ES served as the BLSG's on-Site representative and as the primary point-of-contact at the Site. Parsons ES observed, documented, and evaluated the RAC's performance with respect to the requirements stated in the specifications and shown in the drawings. In addition, Parsons ES collected aqueous, IDW, air, and soil samples and shipped the samples to the appropriate laboratory(ies) for analysis.

The Parsons ES project team was led by Talal Sadaka (Project/Construction Manager). S. Bijoy Ghosh, P.E. assisted Mr. Sadaka by serving as the alternate point of contact and the Technical Director for the project. Mr. Sadaka was responsible for construction oversight during the RA. The Parsons ES team was comprised of a Resident Engineer (or Geologist) of Record (REOR) for each week during the RA. Three REORs (Talal Sadaka, P.E., Don Silkebakken, P.E., and Roger Baldwin) alternated as Field Team Leader and on-Site Representative for The Beaunit Lagoon Site Group. The REOR was supported by field geologists and engineers who were responsible for the collection and shipment of various samples, providing assistance to the REOR, and observing and documenting the RAC's progress during the RA.

An IQAT Team was comprised of personnel from Parsons ES. Mr. Richard Lord, P.E. of Parsons ES was selected as the IQAT Team Leader. The IQAT directed communications through the REOR or the Construction Manager. The REOR established construction Quality Assurance/Quality Control (QA/QC) checks, by performing frequent field audits to ensure that all field QC tests were being conducted as required by the RA Construction Quality Assurance Plan. The REOR also checked to make sure the results of these tests met the acceptance criteria and that the tests and results were properly documented.

The RAC (MES) contracted directly with the Participating Respondents and reported to Mr. Miller. The RAC i) conducted the RA in accordance with the Specifications and Drawings, ii) responded to the quality control issues identified by Parsons ES and iii) satisfactorily completed the RA in accordance with the approved construction schedule.

2.2 SCHEDULE

Activities to implement the RA were initiated in March 1998. On May 11, 1998, MES began mobilizing to the Site. On May 19, 1998 three air monitoring stations were set up.

The actual RA duration was 6 months from March 1998 to September 1998 (i.e., submission of the RAR and the Final Construction Report). A chronology of the major components of the RA is presented below:

September 29, 1995	EPA Declaration of ROD
March 6, 1998	EPA Approval of Final Remedial Design
March 13, 1998	On-Site Preconstruction Meeting
April 15, 1998	Selection of the RAC completed. Notice of Award issued to MES
May 8, 1998	Notice to Proceed for RA construction issued by Parsons ES to MES
May 11, 1998	MES Mobilization and Site Preparation
May 21, 1998	Initiated P5 Area Excavation and Staging
June 3, 1998	P5 Area Excavation and Staging Completed
June 9, 1998	Geosynthetic Clay Liner (GCL) Placement Initiated
June 17, 1998	Initiated and Completed Backfilling for Excavated Area P5
June 24, 1998	Completed Capping (GCL and topsoil) of all Areas
August 12, 1998	Prefinal Construction Inspection (PCI)
August 12, 1998	MES Demobilization and Site Restoration Completed
September 2, 1998	Construction Inspection Report
September 2, 1998	Remedial Action Report

2.3 REMEDIAL ACTION TASKS

A description of the RA tasks is presented in this section. The remediation work was divided into the following five phases:

1. Contractor Mobilization;
2. Site Preparation;
3. Excavation of Soil and Solid Waste;
4. Site Backfilling, Capping, and Final Grading; and
5. Contractor Demobilization.

The work conducted during these phases is described below. The Task Flow Diagram is shown in Figure 2.3, and an as built map of the Site is included as an attachment in Appendix C. In addition to the above-listed RA tasks, an ambient air monitoring program was conducted at the Site. A detailed description of the ambient air monitoring program that was implemented during the RA is presented in the Construction Health and Safety/Contingency Plan.

2.3.1 Contractor Mobilization

The initial phase of the remedial action included the mobilization of the RAC. Mobilization consisted of the following tasks:

1. Transporting personnel and earthmoving equipment to the Site;
2. Setting-up trailers in the Site Support Area;
3. Establishing or upgrading utilities (sewer, water, electric power, and telephone);
4. Mobilizing field sampling and project oversight personnel; and
5. Setting up and calibrating monitoring equipment.

2.3.2 Site Preparation

The site preparation task consisted of several subtasks described in the following subsections.

2.3.2.1 Entrance Road Improvement

The gravel access road to the Site was improved to provide adequate access to the work areas. This activity took place at the beginning of the site preparation phase to provide easy access to the Site.

2.3.2.2 Investigation-Derived Waste Management

Drums containing soil cuttings or development/decontamination (decon) water were staged on Site during the remedial investigation. There were approximately 100 drums on the Site; of these about 50 drums contain solid investigative derived waste (IDW) and about 50 drums contain aqueous IDW.

The solid IDW was characterized by taking a composite sample from the drums (five at a time). All of the drummed solid IDW was determined to be characteristically non-hazardous, based on TC, and was used for backfill and grading on-site outside the lagoon area.

Aqueous IDW was consolidated, sampled and characterized. It was then able to be transported to an off-site facility for disposal. Approximately 1800 gallons of IDW were disposed. Empty IDW drums were cleaned at the Site and recycled at a drum recycling/smelter facility.

2.3.2.3 Site Clearing and Grubbing

Clearing and grubbing activities were conducted prior to site grading activities. Clearing and grubbing activities included cutting of foliage and weeds. The limits of area to be light cleared were within the fenced area. The area to be cleared and grubbed was limited to 10 feet outside the fenced area, the parking/work area, and the "Hot Spot" area. Erosion control measures using silt fences and/or hay bales were implemented at the Site to reduce soil erosion after site clearing. The silt fence and/or hay bales were located downgradient of the land disturbance activities.

Debris generated by site clearing and grubbing activities were disposed of at an off-site wood-chipping/disposal facility. MES obtained the necessary permissions and approvals from the appropriate regulatory authorities to do so.

2.3.2.4 Site Security

An entrance gate was used to control entering and exiting traffic. The gate remained open during hours when RA activities were being conducted at the Site. At other times, the gate remained locked. Access to the Site was restricted by a 6 foot high chain-link fence.

Visitors to the Site were required to register at the RAC's field office. Personnel conducting work at the Site were provided with site-specific training as outlined in the Health and Safety Plan (Parsons ES 1997c).

2.3.2.5 Abandonment and Installation of Monitoring Wells

Monitoring wells MW2S and MW3S were abandoned according to the State of South Carolina regulations (Figure 1.2). Any debris that resulted from the abandonment of MW2S and MW3S was disposed at an appropriate off-site disposal facility.

Monitoring well MW6S was constructed according to the State of South Carolina regulations and is included in the ongoing five year monitoring program. The exact location chosen for the well was determined by the (REOR) in the field (Figure 1.2). The monitoring well abandonment and installation report is presented in Appendix B.

2.3.2.6 Work Zones

Work zones were delineated at the Site for different types of operations and the flow of personnel and equipment between zones was also controlled. The establishment of the work zones accomplished the following:

1. Personnel were properly protected against the hazards present;
2. Work activities and contamination were confined to the designated areas; and
3. Personnel were at all times able to be easily located in case an emergency had occurred and evacuation become necessary.

The following three types of work zones were established during the remedial activities:

- **Exclusion Zone:** The exclusion zone comprised areas with known contamination, and contiguous areas as required by the regulatory agencies.
- **Contamination Reduction Zone:** The contamination reduction zone was used for the flow of equipment and personnel moving from an exclusion zone to the support zone, i.e.) the decon area.
- **Support Zone:** The support zone included the remaining areas of the job site including areas for support facilities (supplies and equipment storage, maintenance areas, etc.) and a break area for personnel.

The RAC was required to develop a Construction Health and Safety Plan (CHSP). The CHSP specifically addressed these zones as well as worker protective clothing, personnel monitoring, and other safety issues.

2.3.2.7 Storm Water Run-off Control, Collection, and Disposal

Within the general area of the "Hot Spot" excavation and the Site, soil berms were constructed to divert storm water around the areas of potential contamination and the work area. The diverted storm water flowed to the nearest storm water collection channel and discharged to the unnamed stream located west of the Site. The unnamed stream discharges into Howard Branch Creek.

Storm water did not accumulate within the excavation area and therefore was not a problem.

2.3.2.8 Temporary Utilities

Temporary utilities required during the RA included electrical power, telephone, water service, sanitary, and refuse service. Lighting was added to the Site as necessary to facilitate site work. Lighting was powered by portable generators. These utility services added to the Site during the RA were removed during the demobilization activities.

Potable water was used for adjusting soil moisture levels during the backfill activities, dust control, personnel and truck decontamination procedures, and landscaping.

2.3.2.9 Support Areas

Support areas were established for the location of office trailers and contractor equipment/supplies staging during the RA. Areas for parking earthmoving equipment and storage of decontamination equipment were established in the support areas. Support areas were provided with necessary utility services.

2.3.2.10 Equipment and Personnel Decontamination Pad

A decontamination pad was constructed for decontamination of equipment and personnel exiting the exclusion zone. The pad was located within the fenced area. Decon water flowed to a collection sump and was pumped into a holding tank for disposal.

2.3.3 Excavation of Soil and Rubbery Waste Material

Excavation activities were conducted at two separate areas, the P5 "Hot Spot" area and the exposed piles of rubbery waste material near the edge of the lagoon area.

Soil remediation goals, established as performance standards for the P5 "Hot Spot" location in the Record of Decision [(ROD), EPA 1995] for the Site, controlled the extent of excavation at P5.

Disposal of excavated soil was in compliance with the applicable, or relevant and appropriate requirements of RCRA regulations (40 CFR Parts 261, 262 (Subparts A-D), 263, and 268).

No characteristically hazardous soils (as determined by TC) were found on-site. Therfore, non-hazardous soils were placed within the Site, outside the lagoon area and used for grading purposes.

2.3.3.1 "Hot Spot" Excavation

The "Hot Spot" at pipeline location P5 was excavated and the excavated soil was tested to evaluate whether it was characteristically hazardous for TC. All excavated soil passed TC criteria, and was also placed into the Site area and used for grading outside the lagoon area.

The initial excavation was 2 feet deep with an area of 20 feet by 20 feet. After the initial excavation was complete, four confirmation soil samples were collected from the middle of the excavation sidewalls and one confirmation soil sample was collected from the excavation floor and analyzed for arsenic and nickel. The soil action levels (SALs) for arsenic and nickel in soil at this Site were 3.2 mg/kg and 4.4 mg/kg, respectively.

After initial excavation activities, all of the collected samples exceeded the SALs. Additional soil was excavated around all sample locations. An additional 10 feet was excavated on the two sides that failed at the highest cleanup levels, and an additional three feet was excavated on the sides that failed with levels very close to the SALs. The floor was excavated an additional foot. The second excavation was now 3 feet deep with

an area of 33 feet by 33 feet. Confirmatory samples were also taken at the center of each sidewall and the center of the floor again.

For the second confirmatory sampling event, all samples but one sidewall sample nearest the road failed. However, this time all of the samples were very close to the SALs. Due to the low detection levels in the confirmatory samples and the extent of the second excavation of the area, and after discussion with EPA and SCDHEC about the SALs and the confirmatory samples levels, it was agreed to backfill the excavation area with clean soil and cap it with GCL. This solution was determined to provide adequate protection to terrestrial wildlife and human health. A total of 99.4 cubic yards (CY) of soil was excavated.

2.3.3.2 Rubbery Waste Material Excavation

The visible solid waste (i.e., visible trash and debris, solid wastes from tennis ball and racquet ball manufacturing operations) was removed. Waste consisting of this rubbery material at the edge of the lagoon was excavated to the extent that the excavated area when backfilled with specified backfill material, provided a suitable subgrade for the cap construction. Approximately 410 tons of excavated solid, rubbery waste was transported to an approved Subtitle D landfill for disposal.

2.3.4 Site Backfilling, Capping and Final Grading

The Site was backfilled using imported clean fill. After the backfill was placed to the design grades, a geosynthetic clay liner (GCL) cap was installed over the backfilled area. The cap was overlain with an 18 inch thick layer of imported clean backfill material and topsoil. A vegetative cover was then established over the topsoil layer. The Site was i) graded to facilitate drainage of storm water away from the capped area and ii) vegetated to minimize erosion.

2.3.4.1 Backfilling

Soil backfill was brought in from an off-site borrow-pit area. All excavated soil from P5 "Hot Spot" passed the TC criteria, and was used to augment imported clean fill, however, the excavated soil was not used to backfill the lagoon area. The backfill was placed in layers (or "lifts"), adjusted for appropriate moisture content, then compacted to achieve 90 percent compaction. Approximately 14,790 tons of soil was used for backfill purposes during the RA.

Two areas were backfilled prior to installing the cap. The "Hot Spot" excavation was backfilled using imported clean fill and compacted back to the original grade. The lagoon was backfilled with coarse aggregate gravel up to the original water level. However, the Lagoon was deeper than initially estimated. This required the removal of a large amount of water from the lagoon to prevent flooding the site. Nine liquid storage tanks, hereafter refered to as frac tanks (20,000 gallon capacity), were used to store water as it was pumped out of the lagoon while the lagoon was being backfilled. Once enough water had been sufficiently removed and the lagoon adequately filled with aggregate (approximately 2530 tons), the remaining portion of the lagoon area was then backfilled

with imported clean fill soil according to the final grading plans. The lagoon water (178,820 gallons) in the 9 frac tanks was later able to be transported to an off-site facility for disposal.

2.3.4.2 Cap

After the completion of backfilling activities, the Site was prepared to receive the GCL cap. The GCL selected for the Site met the 10^{-9} cm/sec permeability requirement. It was used to cover the Site area (61,000 SF), and the P5 area (940 SF). The Site was graded to allow an effective drainage of storm water from the Site and to avoid run-on of storm water.

2.3.4.3 Site Grading and Landscaping

After the completion of GCL installation, the area (as depicted in the Agency Final Remedial Design as the area on which the remedy was constructed) received a minimum of 12 inches of backfill material and 6 inches of topsoil placed over the GCL. Further, the Site areas that were modified during the RA were graded to meet undisturbed grades at the Site.

2.3.5 Contractor Demobilization

Demobilization occurred at the completion of RA and consisted of the following:

1. Transportation of trailers, temporary facilities, personnel, equipment, instruments, and materials from the Site;
2. Cleaning of equipment, as required, during demobilization; and
3. Cleaning of earthmoving equipment prior to their removal from the Site.

Demobilization also included removal of all waste and debris generated during the RA activities and demobilization activities.

2.4 PREFINAL CONSTRUCTION INSPECTION

On August 12, 1998, the Pre-final Construction Inspection of the Remedial Action Construction was conducted at the Site. Representatives of the U.S. Environmental Protection Agency (EPA), South Carolina Department of Health & Environmental Control (SCDHEC), Beaunit Lagoon Site Group (BLSG), Parsons Engineering Science, Inc. (Parsons ES), and Murphy Environmental Services, Inc. (Murphy) were present for the inspection.

The purpose of the Pre-final Construction Inspection was to inspect the status of each remedial action (RA) construction task and, if necessary, to develop a list of items that were not accepted as complete by EPA. Talal Sadaka presented the status of the RA construction tasks and described the form to be used for the Pre-final Construction Inspection.

All attendees inspected the Site and reviewed the status of each RA construction task. The conclusions of the Pre-final Construction Inspection are presented below.

- Twelve of 16 tasks were accepted as complete.
- The construction associated with two tasks, i.e., monitoring well abandonment and installation of monitoring well MW6, was completed before the Pre-final Construction Inspection; however, the records associated with the tasks were provided to SCDHEC on August 12, 1998.

The construction associated with the erosion and sediment control task and the landscaping tasks were completed before the Pre-final Inspection; however, as observed during the Pre-final Inspection, the final vegetative cover was not fully established. Also, at one area, the results of minor erosion were observed. Additional erosion control measures, e.g., regrading of the area and placement of hay bales, were implemented on the day of the Pre-final Inspection. The additional erosion control measures were acceptable to EOPA and SCDHEC

2.5 FINAL CONSTRUCTION INSPECTION

As there are no items pending construction completion, a Final Construction Inspection has not been scheduled.

Table 2.1
Responsibility Matrix
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

Position	Personnel	Organization Name & Address Telephone, FAX, e-mail	Responsibilities
EPA Remedial Project Manager	**Steven M. Sandler**	USEPA Region IV Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303 404) 562-8818 (404) 562-8788 (FAX) *sandler.steven@epamail.epa.gov*	Primary EPA Contact Oversight of Group activities Execution of CD
EPA's Contractor for Oversight	**Douglas A. Hopper**	CDM FPC 800 Oak Ridge Turnpike Suite 500 Oak Ridge, TN 37830 423) 482-1065 (423) 481-3835 (FAX) *hopperda@cdm.com*	Oversight of RA Construction Oversight of Monitoring during RA
South Carolina DHEC	**Jim Bowman**	South Carolina DHEC Columbia, South Carolina (803) 896-4029 (803) 896-4002 (FAX)	Primary State (SC) Contact State Liaison to EPA

Table 2.1 - Continued
Responsibility Matrix
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

Position	Personnel	Organization Name & Address Telephone, FAX, e-mail	Responsibilities
Beaunit Lagoon Site Group (BLSG) Project Coordinator	**Robert (Pete) Miller**	Wilson Sporting Goods, Co. 206 Georgia Street Fountain Inn, SC 29644 (864) 862-4416, Ext. 101 (864) 862-6150 (FAX) ***pamiller@racquet.wilsonsport.com***	Primary Project Contact Coordinate Project Activities Provide Direction to Contractors
BLSG Alternate Project Coordinator	**Nancy Prince**	El Paso Energy Corporation 1001 Louisiana P.O. Box 2511 (Zip 77252) Houston, TX 77002 (713) 420-3306) (713) 757-6825 (FAX) ***princen@epenergy.com***	Alternate Project Contact
RA Construction Contractor	**Roger Woolbright**	Murphy Environmental Services 2654 Channel Ave. Memphis, TN 38113 (901) 774-6565 (901) 774-7154 (FAX)	RA Construction

Table 2.1 - Continued
Responsibility Matrix
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

Position	Personnel	Organization Name & Address Telephone, FAX, e-mail	Responsibilities
Supervising Contractor Project Manager	**Talal Sadaka**	Parsons Engineering Science 5390 Triangle Pkwy Suite 100 Norcross, GA 30092 770-446-4900 770-446-4910 (Fax) ***Talal_Sadaka@parsons.com***	Primary Contact for the Supervising Contractor Schedule and budget tracking Overall Project Management Direction of the Supervising Contractor Project Personnel Construction Overnight
Supervising Contractor Resident Engineers/Geologist	**Don Silkenbakken** **Byron Dahlgren** **Roger Baldwin**	Parsons Engineering Science 5390 Triangle Pkwy Suite 100 Norcross, GA 30092 770-446-4900 770-446-4910 (Fax) ***Don_Silkenbakken@parsons.com*** ***Bryon_Dahlgren@parsons.com*** ***Roger_Baldwin@parsons.com***	Management of daily activities in performance of RA Ambient Air Monitoring Collection of samples during RA Direction of the Supervising Contractor project personnel at Site Field Orders Schedule Tracking Coordination with local emergency member response team

Table 2.1 - Continued
Responsibility Matrix
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

Position	Personnel	Organization Name & Address Telephone, FAX, e-mail	Responsibilities
Supervising Contractor Technical Advisors	**S. Bijoy Ghosh** **Richard Lord**	Parsons Engineering Science 5390 Triangle Pkwy Suite 100 Norcross, GA 30092 770-446-4900 770-446-4910 (Fax) ***Bijoy_Ghosh@parsons.com*** ***Richard_Lord@parsons.com***	Advise the Supervising Contractor project manager on design and construction issues.
Supervising Contractor Health and Safety Coordinator	**Ed Grunwald**	Parsons Engineering Science 5390 Triangle Pkwy Suite 100 Norcross, GA 30092 770-446-4900 770-446-4910 (Fax) ***Ed_Grunwald@parsons.com***	Identification of health and safety protocols Compliance with health and safety procedures

Figure 2.1
Project Organization
Beaunit Corp. Circular Knit and Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

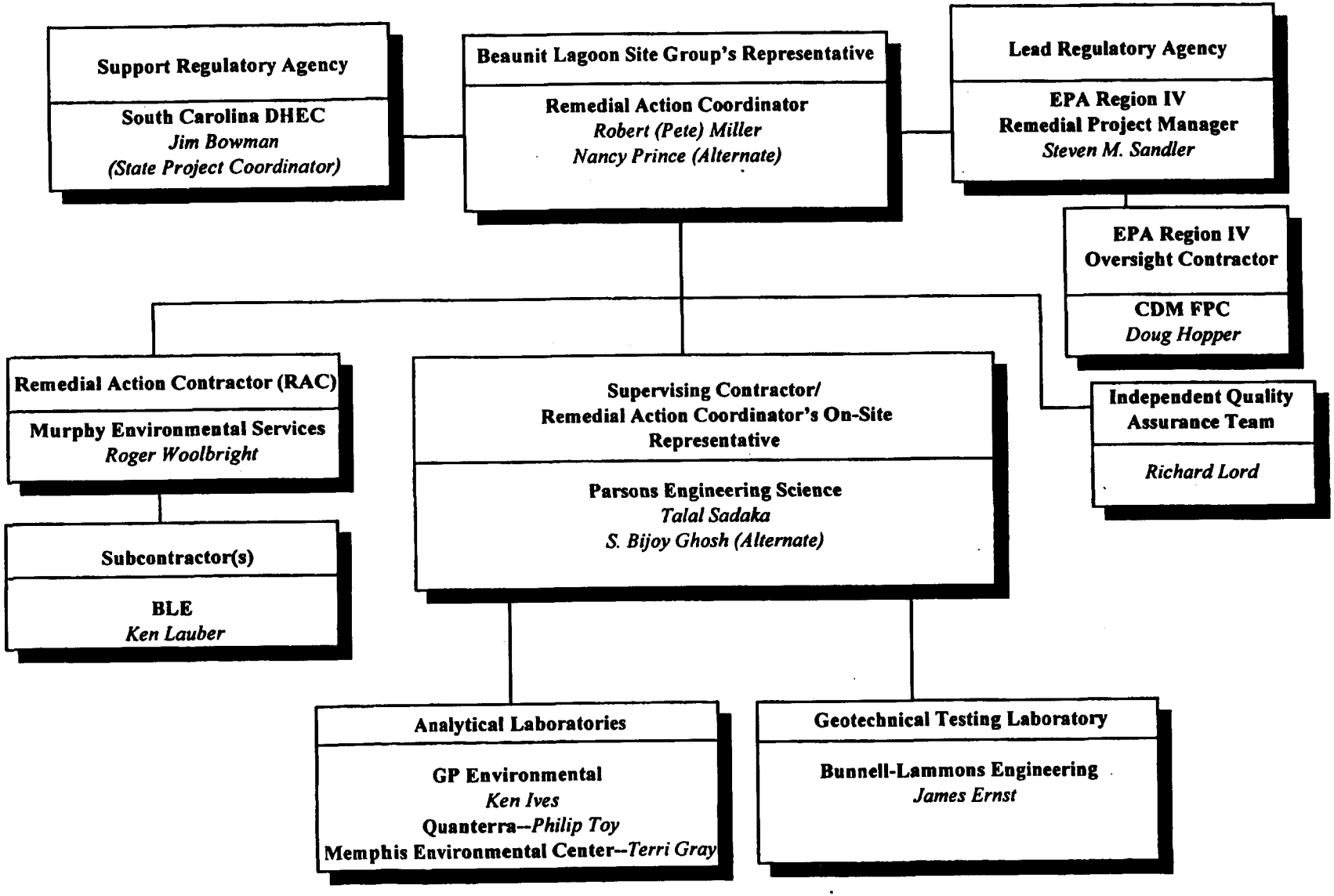


Figure 2.2
Communication and Reporting Relationships
Beaunit Corp. Circular Knit and Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina

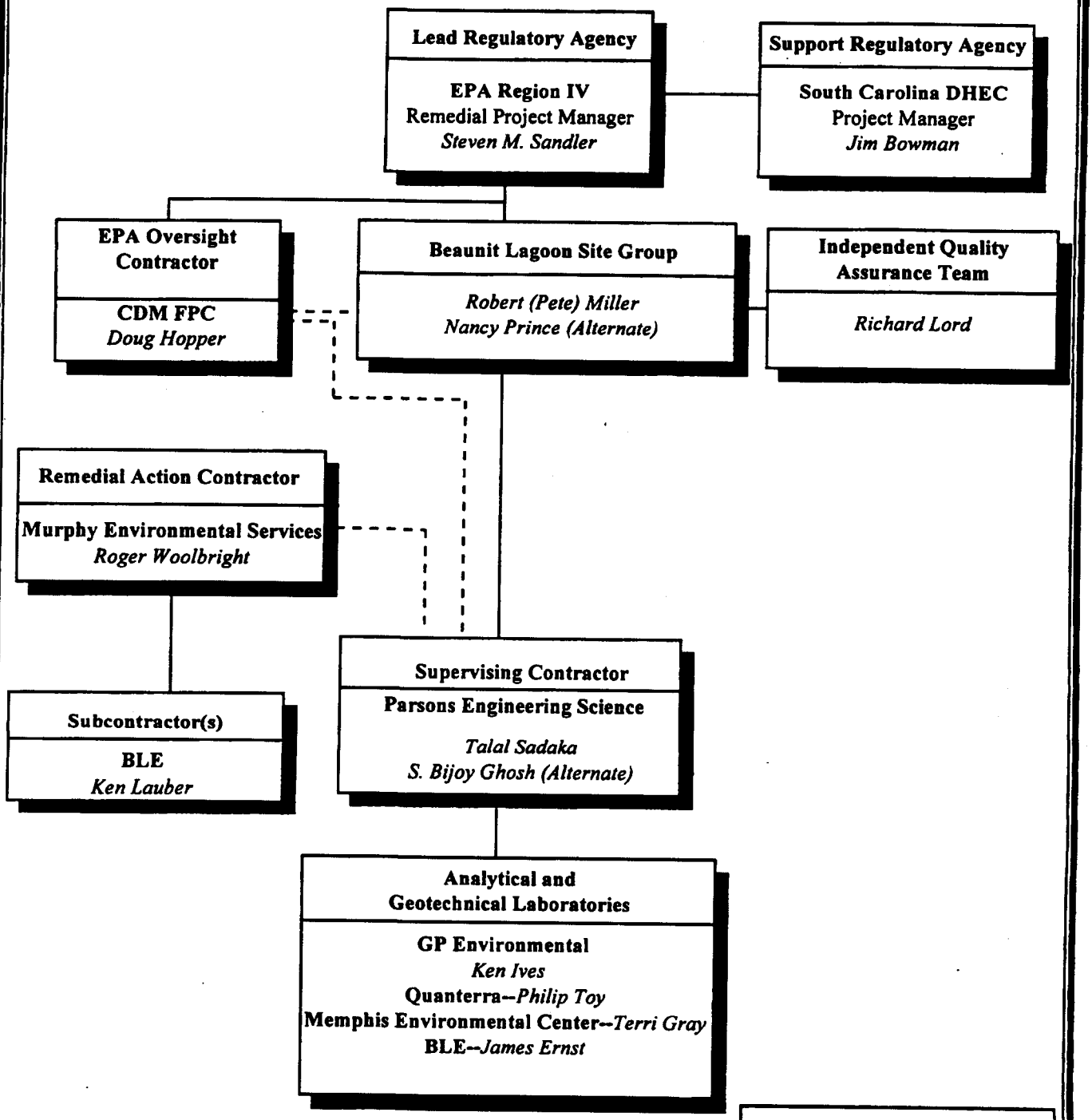
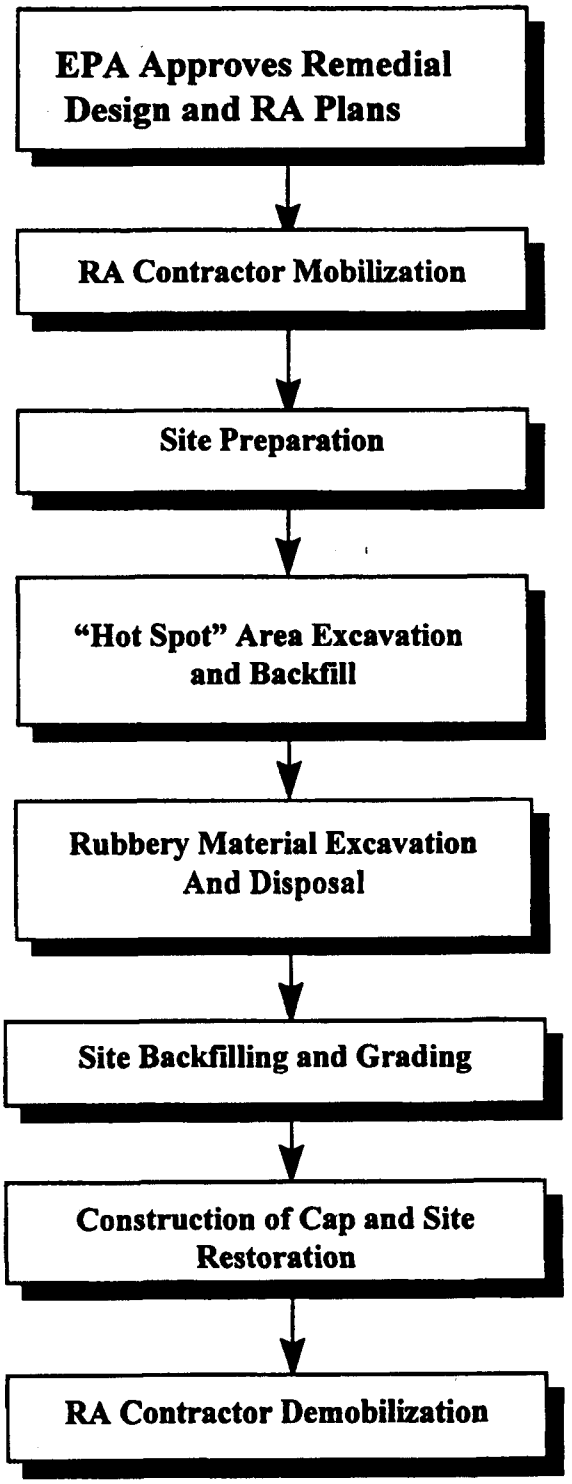


Figure 2.3
Task Flow Diagram
Beaunit Corp. Circular Knit & Dyeing Plant NPL Site Remedial Action
Fountain Inn, South Carolina



SECTION 3
CERTIFICATE OF COMPLETION

The requirements for submission of a certificate of completion with the RAR is described in Section XIV of the CD for the Site. The Respondent's Project Coordinator and a registered professional engineer are required to certify that the Remedial Action has been completed in full satisfaction of the requirements of the CD.

> "To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Robert (Pete) Miller Participating Respondent's Project Coordinator	Date
Talal Sadaka, P.E. Project/Construction Manager	Date
Robert L. Thoem, P.E. Technical Director	Date

SECTION 4
OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) Plan (Parsons ES, 1998) was developed in partial fulfillment of the requirements of the CD for the RD/RA of the Site. The O&M Plan will be reviewed and approved by the U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC). The procedures described in the O&M plan will be implemented at the Site in compliance with the existing Construction Health and Safety Plan (Parsons ES, 1997.) Groundwater analytical results and inspection details will be provided to EPA for review.

A security fence, consisting of a six-foot high chain-link fence topped with three strands of barbed wire currently exists at the site. At the completion of the RA, the existing security fence with lockable gates is being used to secure the Site. The remedy also includes deed restrictions for the site.

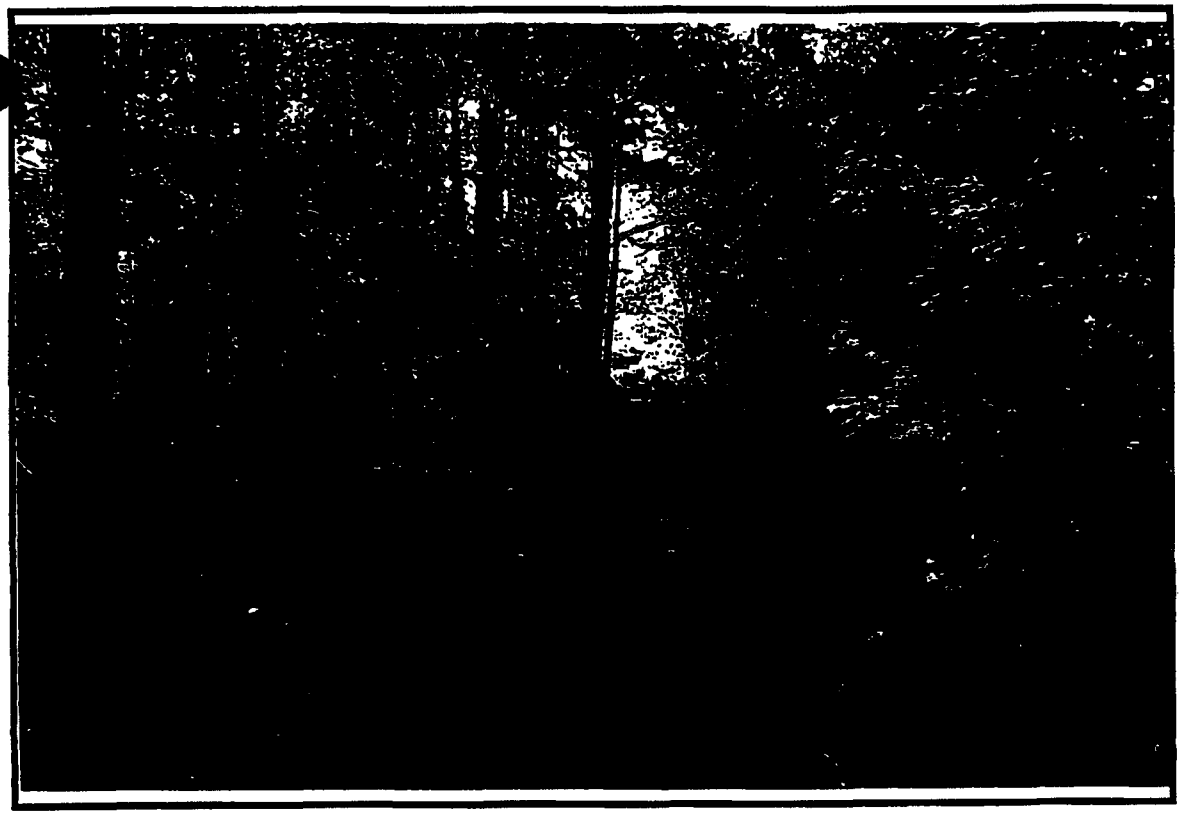
The O&M task for groundwater monitoring will include periodic monitoring of groundwater and inspection and maintenance of the monitoring wells. The groundwater monitoring activities will be conducted in accordance with the EPA-approved PSVP (Parsons ES, 1997). The specific procedures for conducting the groundwater monitoring activities are described in the O&M Plan.

The cap area will be periodically inspected and maintained until a good stand of grass has been established. The cap area will be inspected for condition of the vegetative cover, physical integrity, differential settlement and deterioration of the soil cover over the geosynthetic clay liner (GCL).

The data and results obtained through the implementation of the O&M tasks will be assessed at the end of five years following the RA to determine the need for future groundwater or cap maintenance O&M activities at the Site.

APPENDIX A

PICTORIAL CHRONOLOGY



SITE PREPARATION:
Pre-Construction Road Clearing (May 1998).

SITE PREPARATION:
Pre-Construction Road Improvement (May 1998).

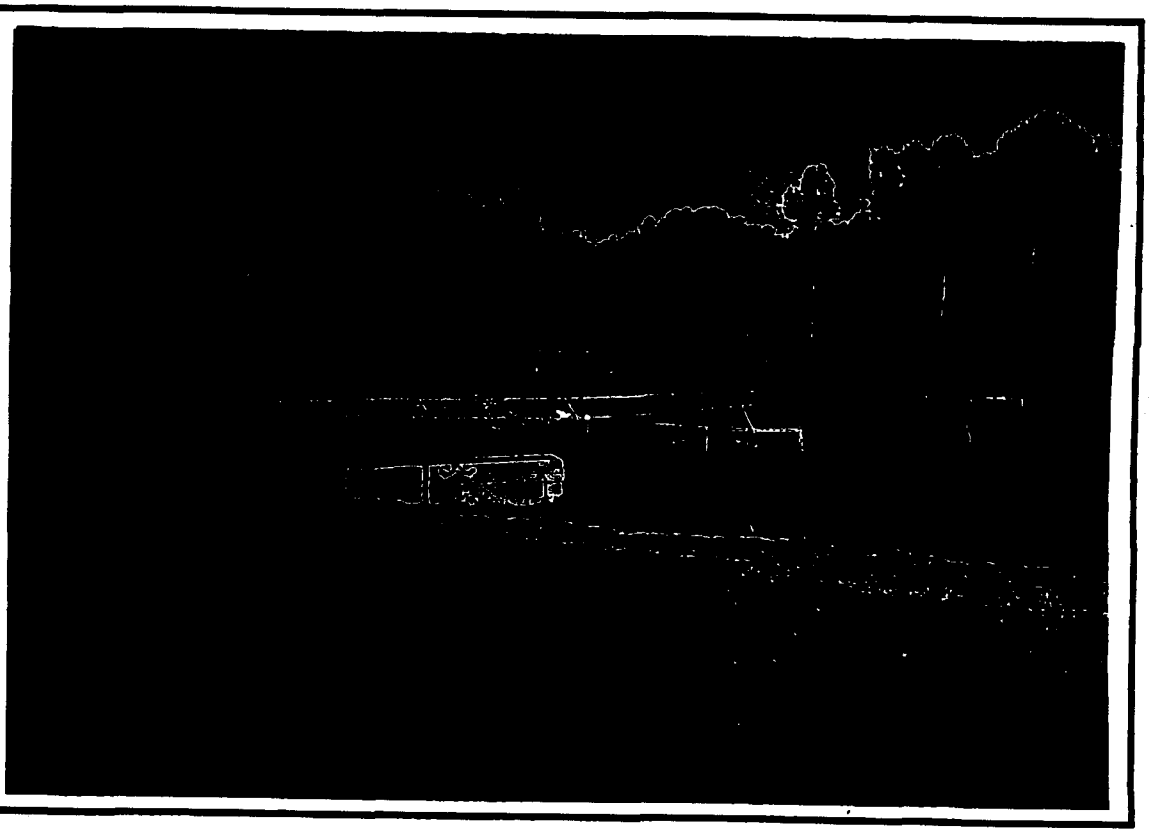
SITE PREPARATION:
Site Prior to Clearing and Grubbing (May 1998).

SITE PREPARATION:
Site (Lagoon) Prior to Clearing and Grubbing (May 1998).

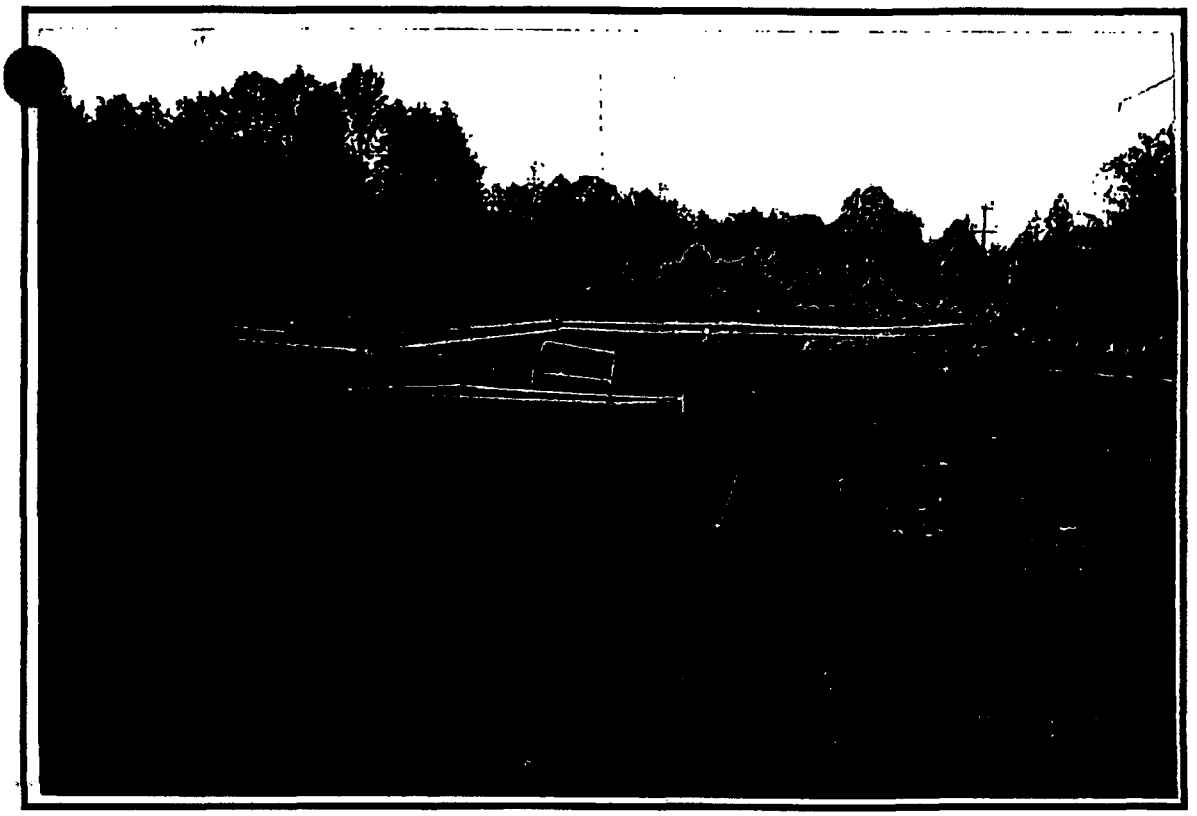
SITE PREPARATION
Clearing and Grubbing
Activities (looking West).

SITE PREPARATION:
Clearing and Grubbing
Activities (looking East).

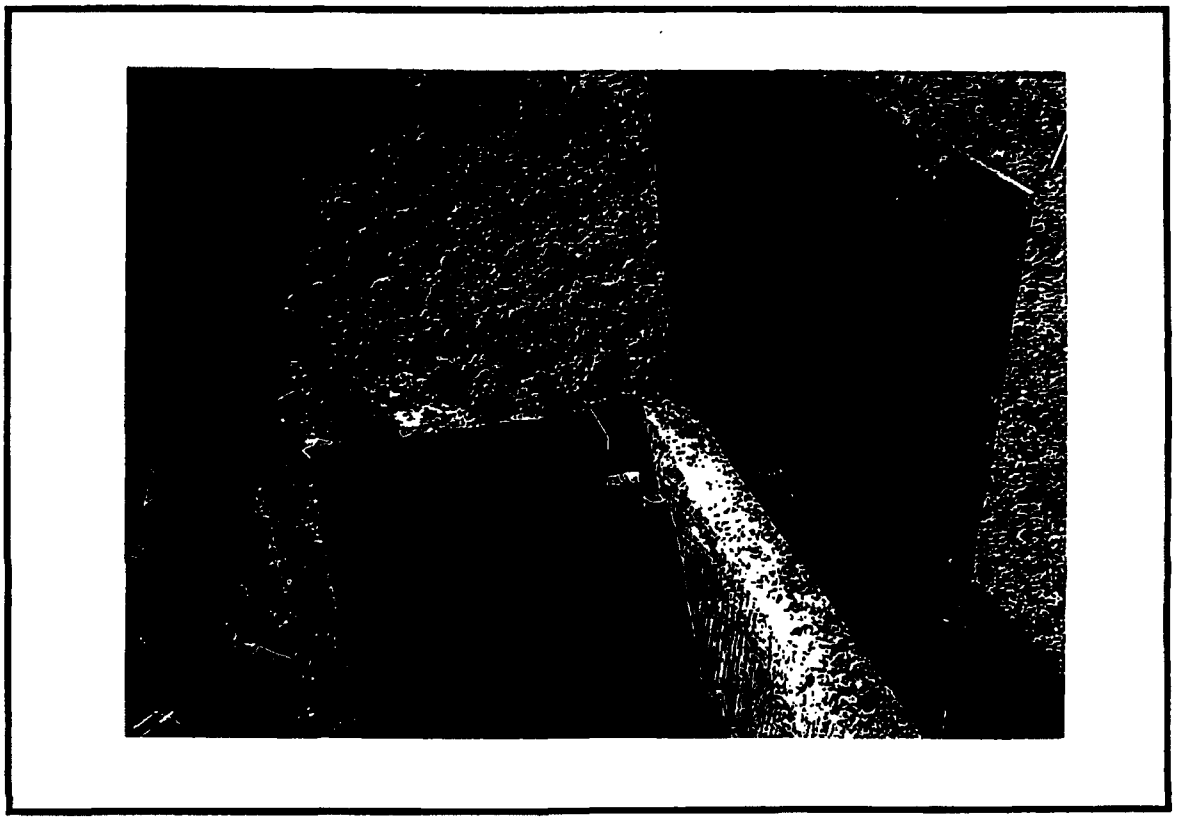
SITE PREPARATION: Setting up Site Trailers (May 1998).



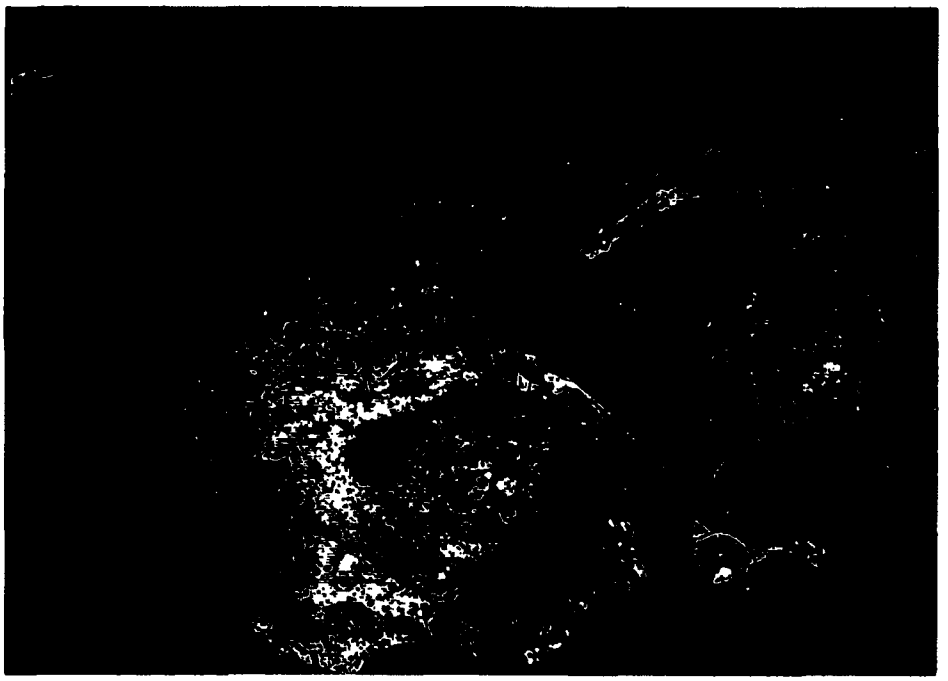
SITE PREPARATION: Establishing Decontamination Pad (May 1998).



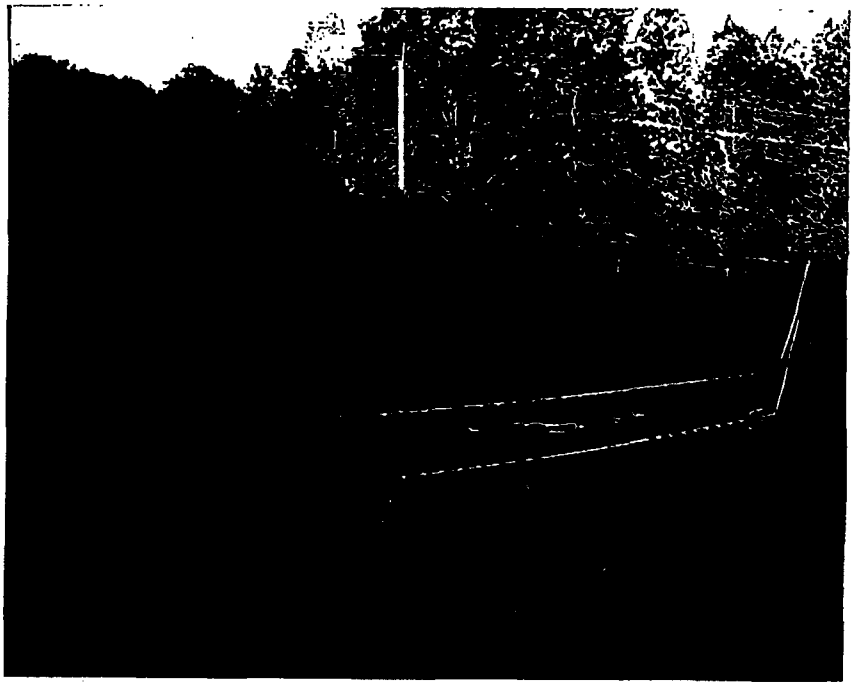
SITE PREPARATION:
Marking Valve Box Locations (May 1998).



SITE PREPARATION:
Looking Into Empty Valve Box (May 1998).



SITE PREPARATION:
Valve Box After Being Filled with Concrete (May 1998).



SITE PREPARATION:
Picture of Lagoon and Rubbery Waste Material (looking Southwest) (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Consolidation and Loading of Rubbery Material (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Hauling Rubbery Waste Material to Subtitle D Landfill (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Defining Extent of P5 Area (May 1998).

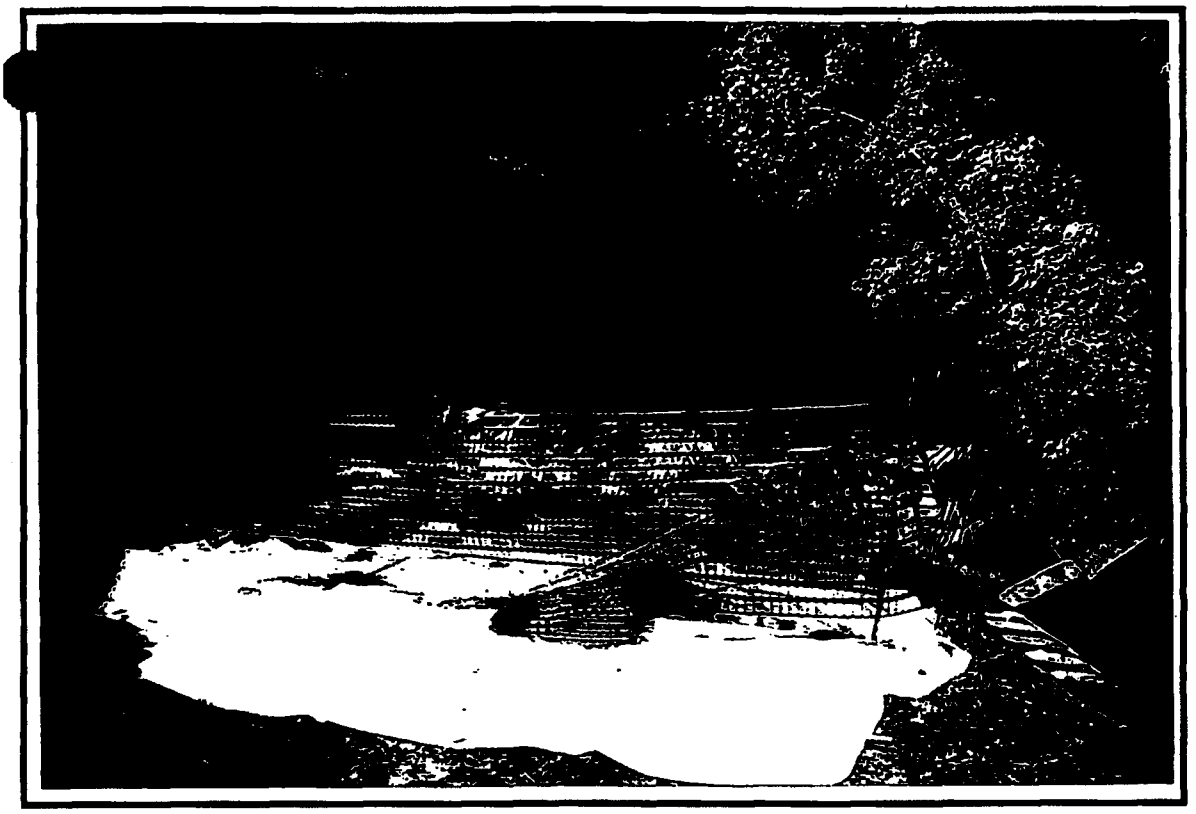
EXCAVATION OF SOIL AND SOLID WASTE:
Commencement of Excavation of P5 Area (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Staging of 50 CY Pile On-site (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Covering 50 CY Staged Pile On-site (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE
Confirmatory Sampling After Initial Excavation Event (May 1998).

EXCAVATION OF SOIL AND SOLID WASTE:
Covering P5 Area After Initial Excavation Event (May 1998).

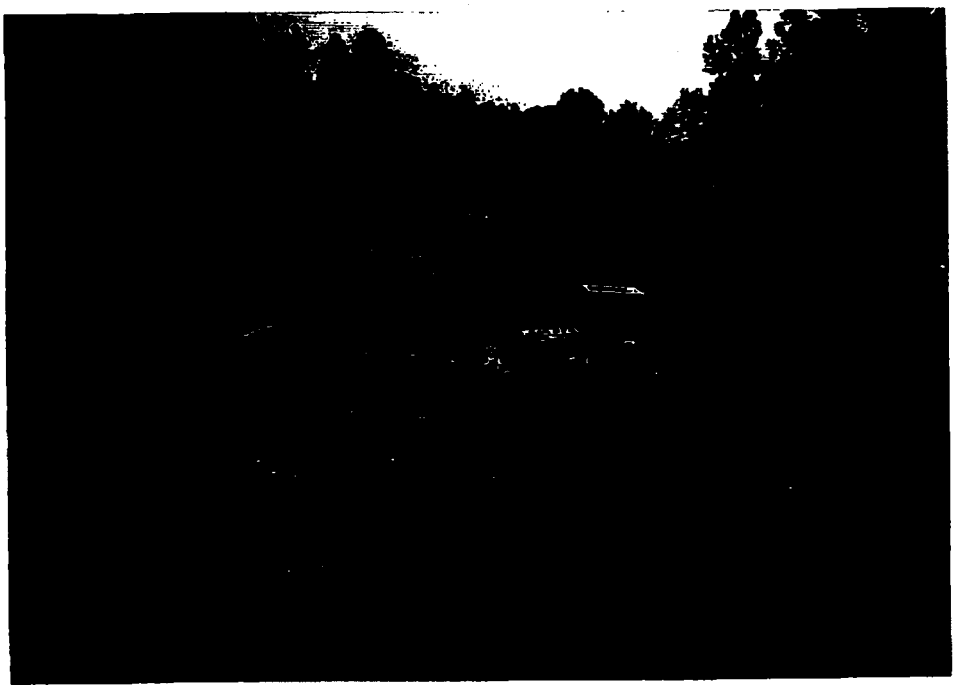


EXCAVATION OF SOIL AND SOLID WASTE:
Covering P5 Area After Second Excavation Event (May 1998).

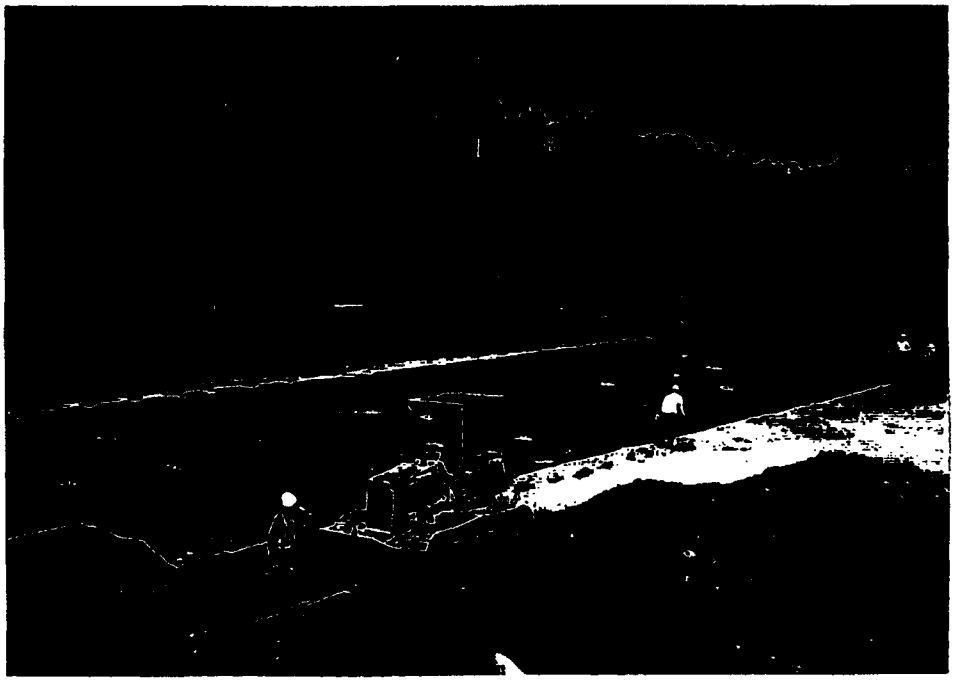
EXCAVATION OF SOIL AND SOLID WASTE:
Commencement of Filling Lagoon Area with Aggregate (May 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Backfilling Lagoon Area (May 1998).

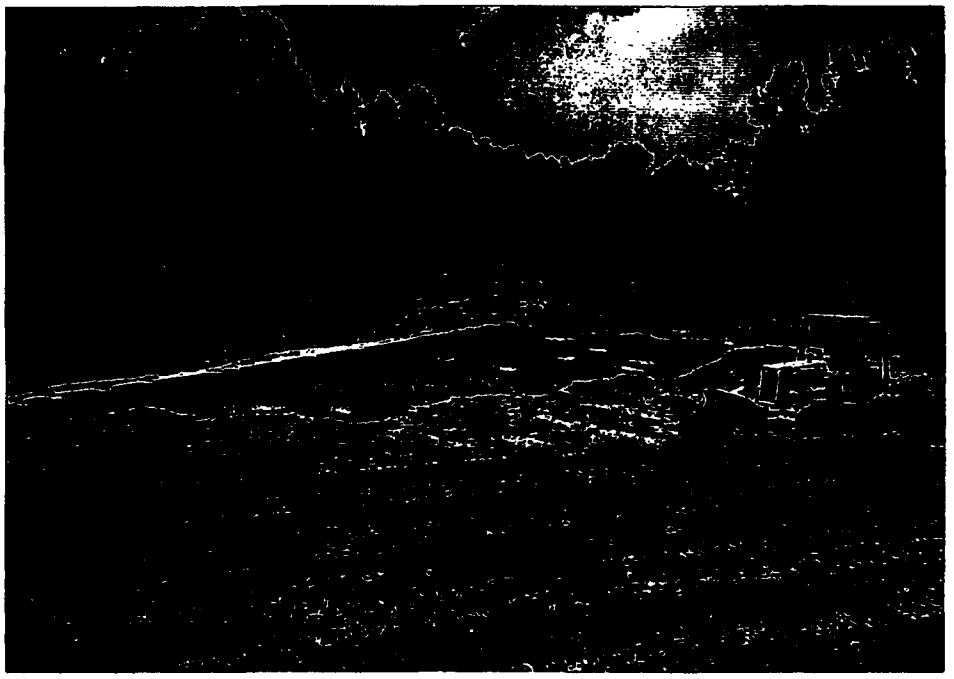
BACKFILLING, CAPPING, AND FINAL GRADE:
Frac Tanks and Location Used for Removal of Excess Lagoon Water (May 1998).



BACKFILLING, CAPPING, AND FINAL GRADE: Completed Backfill of Lagoon Area (May 1998).



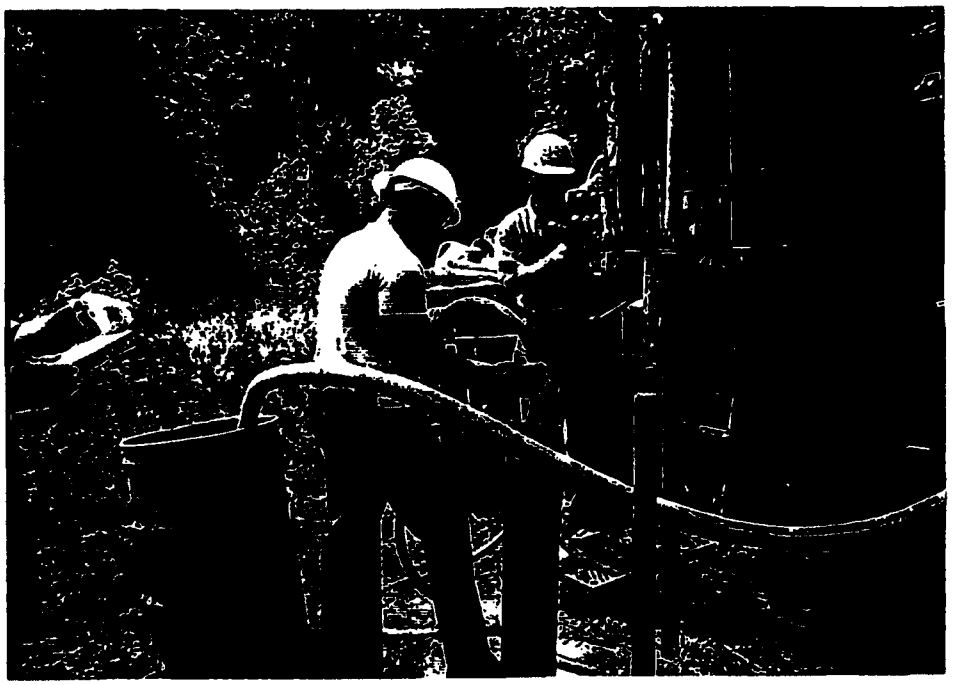
BACKFILLING, CAPPING, AND FINAL GRADE: Covering Top of Aggregate with Geo-Textile Fabric (May 1998).



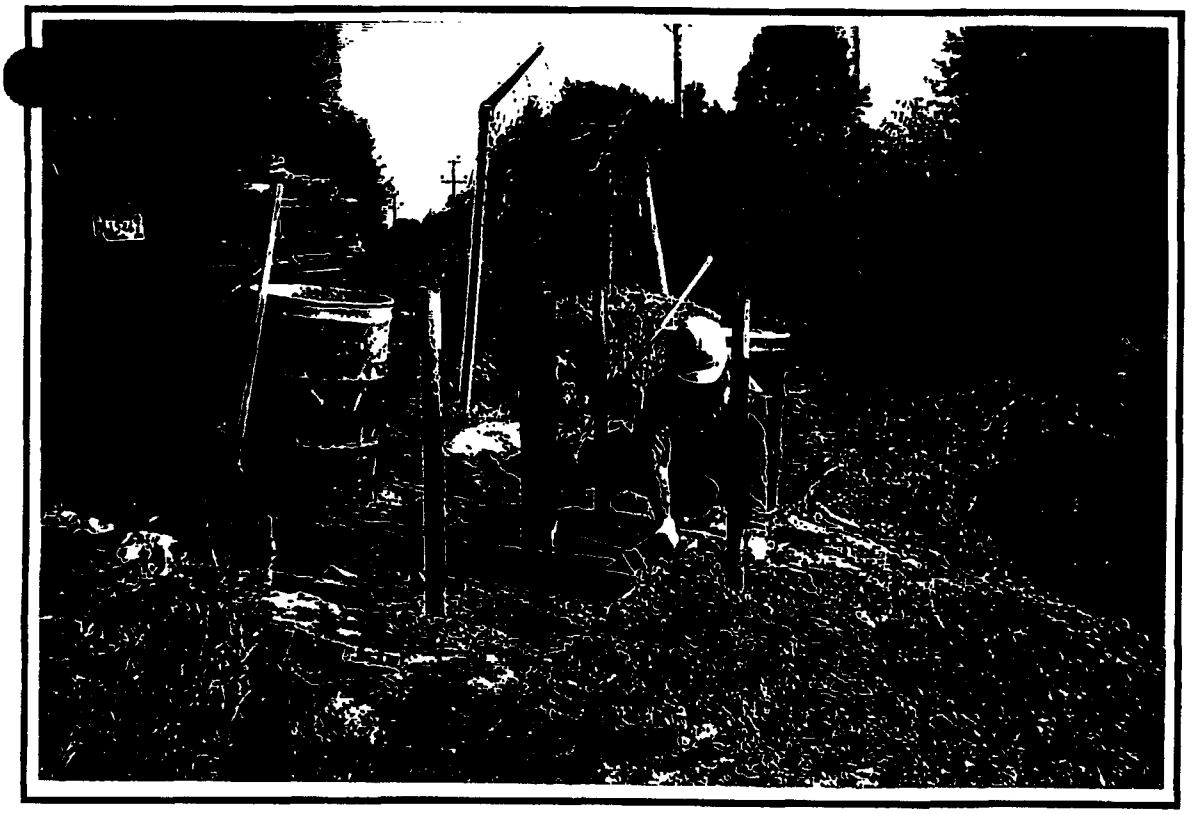
BACKFILLING, CAPPING, AND FINAL GRADE:
Backfilling Activities to Achieve Final Grade Before Placement of GCL (May 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Compaction of Site Backfill (May 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Compaction Testing (May 1998).



MONITORING WELL ABANDONMENT AND INSTALLATION ACTIVITIES:
Monitoring Well (MW2S) Abandonment (June 1998).

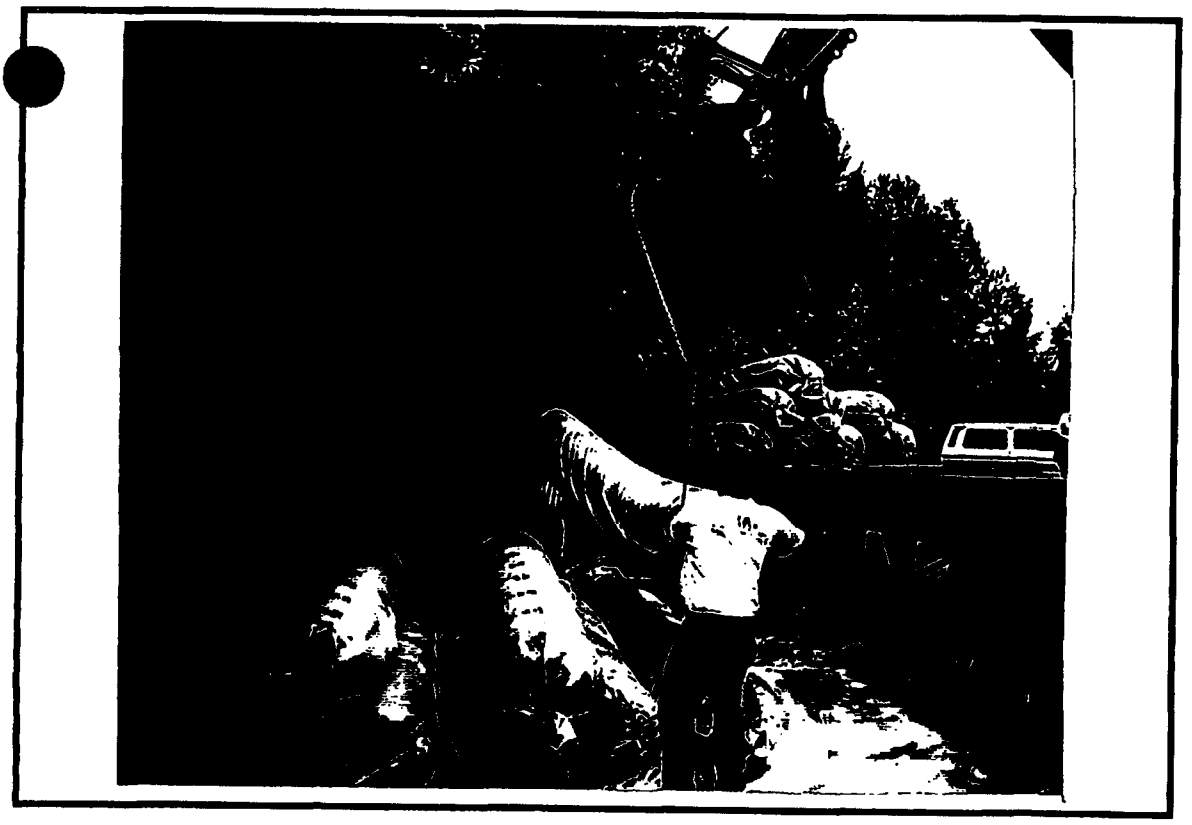


MONITORING WELL ABANDONMENT AND INSTALLATION ACTIVITIES:
Construction of Monitoring Well (MW6S) (June 1998).

WASTE TRANSPORTATION AND TREATMENT/ DISPOSAL:
IDW Drums On-site (June 1998).

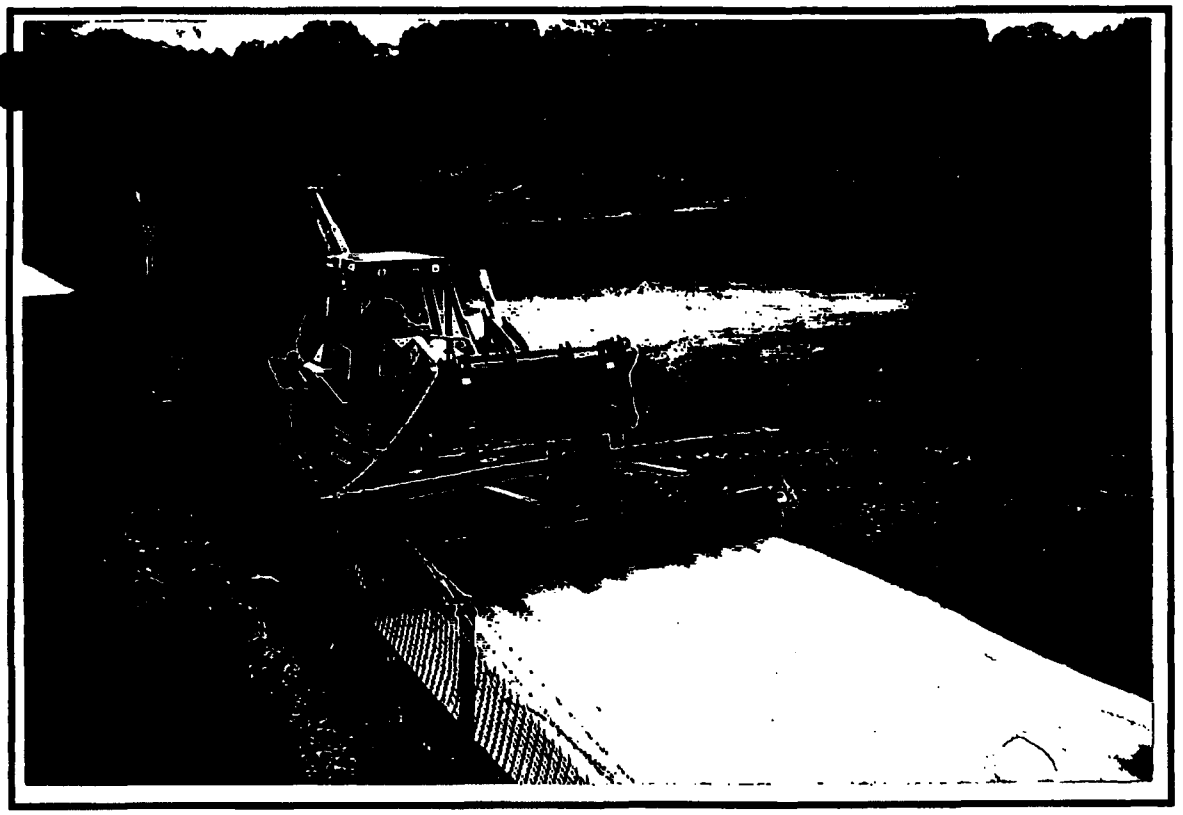
WASTE TRANSPORTATION AND TREATMENT/ DISPOSAL:
Removal of Liquid IDW from Drums (June 1998).

WASTE TRANSPORTATION AND TREATMENT/ DISPOSAL:
Handling Solid IDW On-site (June 1998).



BACKFILLING, CAPPING, AND FINAL GRADE: Unloading GCL On-site (June 1998).

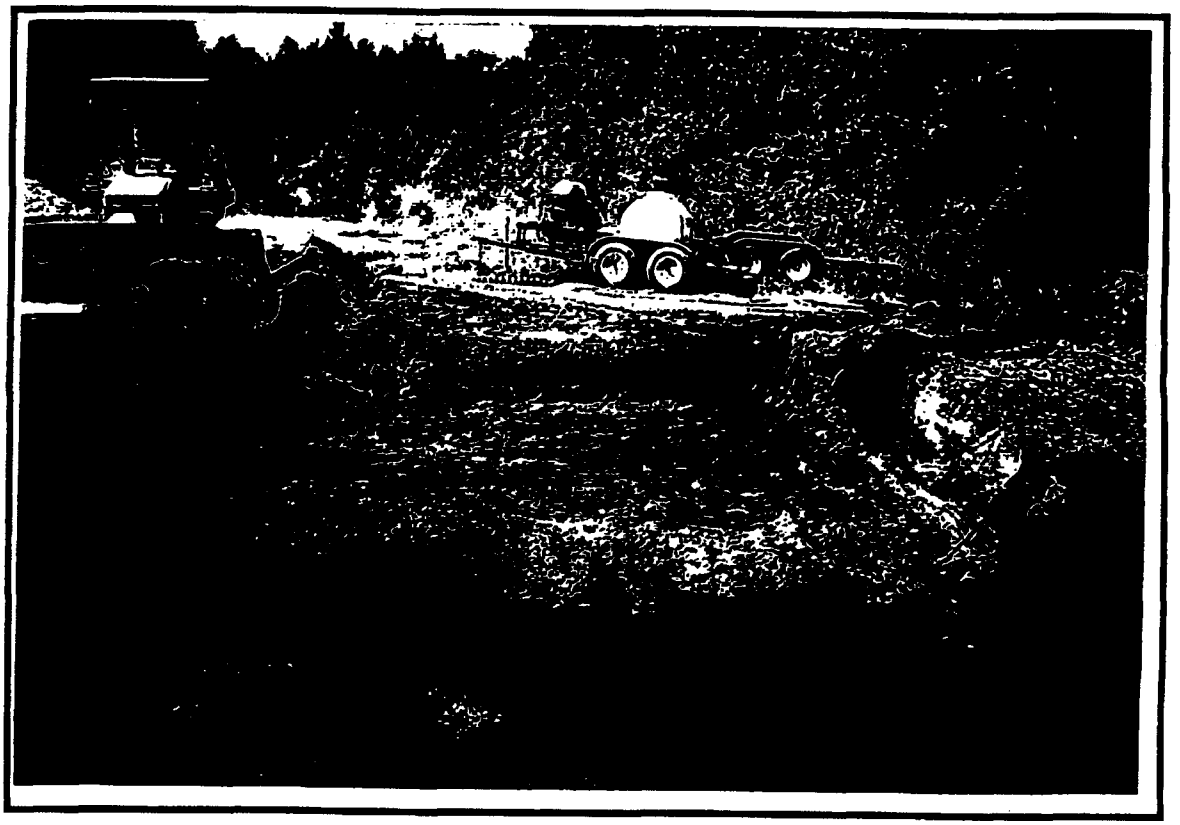
BACKFILLING, CAPPING, AND FINAL GRADE: Transporting GCL for Final Placement (June 1998).



BACKFILLING, CAPPING, AND FINAL GRADE: Commencement of GCL Installation Along SW Fence Line (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE: Installing and Fitting GCL (June 1998).

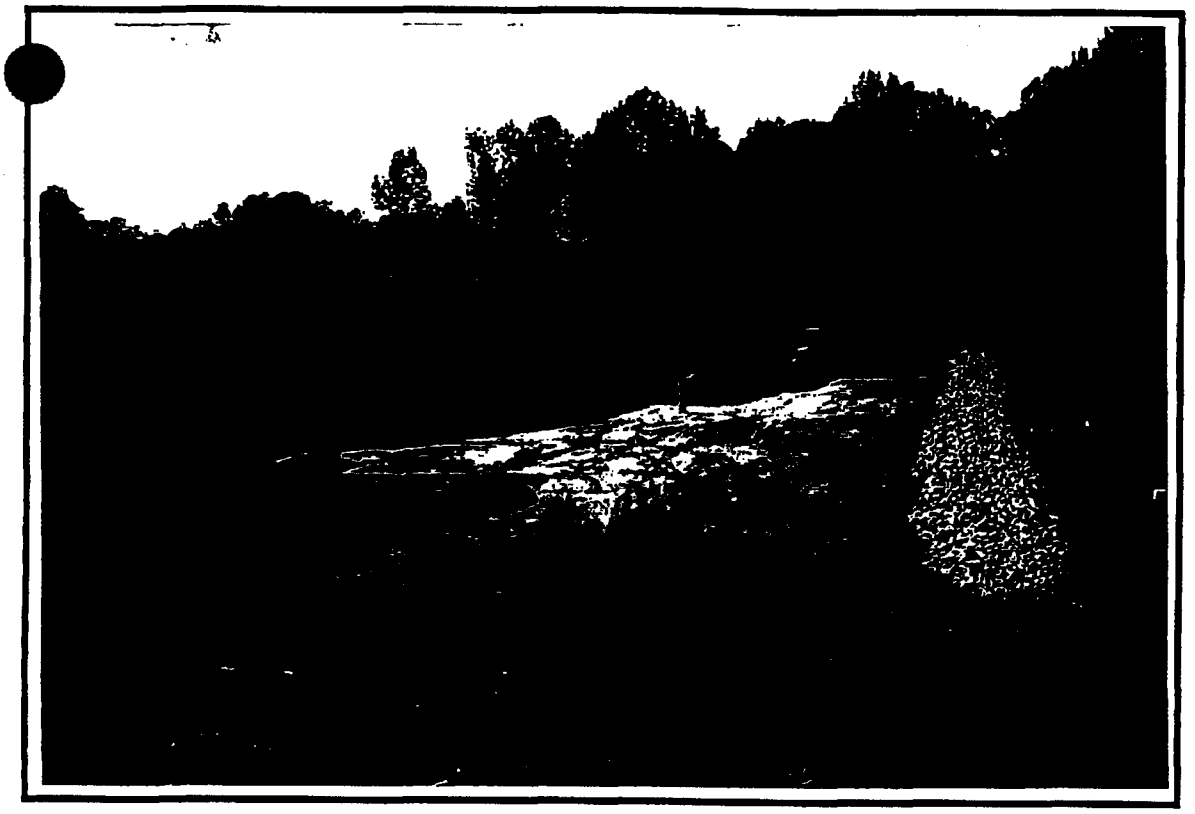
BACKFILLING, CAPPING, AND FINAL GRADE:
Covering GCL with Clean Soil During Installation (June 1998)



BACKFILLING, CAPPING, AND FINAL GRADE:
Backfilling P5 Area with Clean Soil (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
P5 Area Backfill Complete (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Removal of Brush Pile for Off-site Disposal (June 1998).



BACKFILLING, CAPPING, AND FINAL GRADE:
Placement of Topsoil on Top of Covered GCL Prior to Seeding (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Topsoil Spread over GCL Ready for Seeding (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE: Seeding Site with Grass (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE: Establishment of Grass Stand and Placement of Erosion Controls i.e.) Hay Bales and Rip-Rap Drainage Ditch (June 1998).

BACKFILLING, CAPPING, AND FINAL GRADE:
Stand of Grass Established on P5 Area (July 1998).

APPENDIX B

MONITORING WELL ABANDONMENT AND CONSTRUCTION REPORT

BLE INC.
BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

August 12, 1998

South Carolina Department of Health
and Environmental Control
Division of Hydrogeology
2600 Bull Street
Columbia, South Carolina 29201

Attention: Mr. Jim Bowman

Subject: **Monitoring Well Abandonment and Installation Report**
Beaunit Circular Yarns NPL Site
SCD #000 447 268
Fountain Inn, South Carolina
Bunnell-Lammons Job Number J98-1212-01

Dear Mr. Bowman:

Bunnell-Lammons Engineering, Inc. (BLE) is pleased to submit this report of monitoring well abandonment and installation. The scope of work was authorized in your letter to BLE dated May 21, 1998.

Well Abandonment

BLE mobilized to the site on June 2, 1998. AE Drilling Services, Inc (AE) provided the drilling and abandonment services. AE abandoned two monitoring wells (MW-2S, MW-3S) in general accordance with the South Carolina Well Standards and Regulations dated June 2, 1985. AE personnel attempted to remove the well risers and screens from the boreholes using a truck-mounted winch. The well risers and screens could not be successfully removed, so the wells were then tremie grouted from the well's total depth to the ground surface with a Portland cement - 5% bentonite mixture. A copy of the well abandonment record is attached.

Well Installation

One replacement monitoring well (MW-6S) was installed. A truck-mounted drill rig equipped with 4.25-inch ID augers advanced the borehole to the target depth of 20 feet below land surface. The new well was constructed with 2-inch ID polyvinyl chloride (PVC) Schedule-40 casing with flush-threaded joints. The bottom 10-foot section of the well was a manufactured well screen with 0.01-inch wide machined slots. The well screen was installed to the total depth of the boring and then pulled up to 17.25 feet to bracket the observed water table.

As the augers were retracted, a washed sand filter pack (Foster-Dixiana FX-50) was placed around the outside of the well casing from the bottom of the boring to approximately two feet above the top of the screen. The sand filter pack was used to stabilize the formation and to help yield a less

1200 WOODRUFF ROAD, SUITE B-7
GREENVILLE, SOUTH CAROLINA 29607

PHONE (864) 288-1265
FAX (864) 288-4430

turbid ground-water sample. A two-and-one-half foot thick bentonite seal was installed on top of the sand filter pack to seal the monitoring well at the desired level. The well annulus was then grouted to the surface with a cement/bentonite grout mixture. A lockable PVC cap and a protective steel cover were placed over the well. The well was completed with a three-foot square concrete pad. Three concrete filled, steel protective posts were installed around the concrete pad. A boring log and well schematic are included as an attachment. A copy of the water well record is also included.

The well was developed by surging with a surge block, followed by pumping with a dedicated submersible pump until 11 well volumes were removed and the discharge was clear. A copy of the well development record is included as an attachment.

If you have any questions concerning this submittal, please contact us at 864-288-1265.

Sincerely,
BUNNELL-LAMMONS ENGINEERING, INC.

Kenneth A. Lauber, P.G.
Senior Hydrogeologist
Registered, South Carolina #2068

KENNETH A. LAUBER REGISTERED No. 2068 SOUTH CAROLINA PROFESSIONAL GEOLOGIST

Thomas L. Lammons, P.G.
Principal
Registered, South Carolina #893

PROFESSIONAL GEOLOGIST REGISTERED No. 893 SOUTH CAROLINA THOMAS L. LAMMONS

Attachments

Cc: Pete Miller (BLSG)
Steve Sandler (EPA)
Bijoy Ghosh (Parsons ES)
Roger Woolbright (Murphy Environmental)

BLE INC.

BUNNELL-LAMMONS ENGINEERING, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

GROUND WATER MONITORING NO. MW-6S

PROJECT:	Beaunit Lagoon Site	PROJECT NO.:	J98-1212-01
CLIENT:	Murphy Environmental	DATE START:	6-2-98 END: 6-3-98
LOCATION:	Fountain Inn, South Carolina	ELEVATION:	TOC=841.90
DRILLER:	A E Drilling, M. King	LOGGED BY:	KAL
DRILLING METHOD:	CME 75 Hollow stem auger		

DEPTH TO - WATER> INITIAL: 9.2 AFTER 16 HOURS: 8.48 CAVING>

ELEVATION/ DEPTH (FT)	DESCRIPTION	SOIL TYPE	SAMPLES	STANDARD PENETRATION RESULTS BLOWS/FOOT (2 5 10 20 30 40 50 70 90)	MONITOR WELL INSTALLATION DETAILS
	Red and orange, slightly micaceous CLAY (fill)				Neat cement, 0 to 2.5 feet
	Gray, silty, clayey, coarse, moist SAND				Volclay chips, 2.5 to 5 feet
5					
	Gray, micaceous, wet SILT (saprolite)				
10					Filter pack, FX-50 sand 5 to 20 feet
	Gray, brown and cream, micaceous, wet, sandy SILT (saprolite)				.010-inch slotted Schedule 40 PVC well screen, 7.25 to 17.25 feet
15					
	As above, with feldspar rich zone				Total well depth, 17.25 feet
20	Boring terminated at 20 feet. Ground water encountered at 9.2 at time of boring and at 8.48 feet after 16 hours.				Total boring depth, 20 feet
					SURFACE COMPLETION 2.5 foot stick-up
25					
30					
35					

GEOT_WELL_BEA... PJ 8/12/98

DHEC
PROMOTE PROTECT PROSPER

Water Well Record
Bureau of Water
2600 Bull Street, Columbia, SC 29201-1708; (803) 734-5300

LOCATION OF WELL:
County: Greenville SC System Name: MW-2S
Latitude: Longitude:

Distance and Direction from Road Intersections:
SEE Attached MAP

Street Address & City of Well Location:

Sketch Map:
SEE Attached MAP

2. CUTTING SAMPLES: ☐ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
WELL ABANDONMENT		
TREMIE Grouted Well		
FROM BOTTOM (29') to		
GROUND Surface w/		
a Cement/bentonite grout		

*Indicate Water Bearing Zones

(Use a 2nd sheet if needed)

REMARKS:
Abandoned MW-2S

4. OWNER OF WELL: BEAUNIT YARNS NPL SITE
Address: FOUNTAIN INN, SC
NPL SITE - SCD # 000447268
Telephone No.:

Engineer: Burnell-Lammons Engineering
Address: 1200 Woodruff Road, Suite B-7
Greenville, SC 29607
Telephone No.: (864) 288-1265

5. WELL DEPTH (completed) 29 ft. Date Started: 6/2/98 Date Completed: 6/2/98

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☐ PVC ☐ Galvanized ☐ Steel ☒ Other Stainless
2 in. to 17 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: Stainless Steel Diam.: 2
Slot/Gauge: ____ Length: 10
Set Between: 17 ft. and 27 ft. NOTE: MULTIPLE SCREENS USE SECOND SHEET
____ ft. and ____ ft.
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL N/A ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
N/A ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☐ Yes ☐ No
Installed from N/A ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

14. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From N/A ft. to ____ ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: N/A 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

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: [illegible] Date: 7/14/98
Address: [illegible] Greenville SC 29607
Signed: [signature] Cert. No. 959
Authorized Representative

DHEC 1903 (10/96) 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) 734-5300

1. LOCATION OF WELL:
County: Greenville, SC System Name: MW-3S
Latitude: Longitude:
Distance and Direction from Road Intersections: SEE Attached Map
Street Address & City of Well Location:
Sketch Map: SEE Attached Map

2. CUTTING SAMPLES: ☐ Yes ☐ No
Geophysical Logs: ☐ Yes (please enclose) ☐ No

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
WELL ABANDONMENT		
TREMIE Grouted WELL		
from Bottom (26') to		
GROUND Surface with		
A Cement/bentonite grout		
*Indicate Water Bearing Zones		
(Use a 2nd sheet if needed)		

3. REMARKS: Well Abandoned MW-3S

4. OWNER OF WELL: BEAUNIT YARNS NPL SITE
Address: FOUNTAIN INN, SC
NPL SITE - SCD #000447268
Telephone No.:
Engineer: Burnell-Lammons Engineering
Address: 1300 Woodruff Road, Suite B-7
Greenville, SC 29607
Telephone No.: (864) 288-1265

5. WELL DEPTH (completed) 26 ft. Date Started: 6/2/98 Date Completed: 6/2/98

6. ☐ Mud Rotary ☐ Jetted ☐ Bored ☐ Dug ☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE: ☐ Domestic ☐ Public Supply–Permit No. ____ ☐ Industry ☐ Irrigation ☐ Air Conditioning ☐ Commercial ☐ Test Well ☒ Monitor Well ☐ ____

8. CASING: ☐ Threaded ☐ Welded
Diam.: 2
Type: ☐ PVC ☐ Galvanized ☐ Steel ☒ Other Stainless
2 in. to 14 ft. depth
____ in. to ____ ft. depth
Height: Above/Below Surface ____ ft.
Weight ____ lb./ft.
Drive Shoe? ☐ Yes ☐ No

9. SCREEN
Type: Stainless Steel Diam.: 2
Slot/Gauge: ____ Length: 10
Set Between: 14 ft. and 24 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☐ No

10. STATIC WATER LEVEL N/A ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
N/A ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield: ____

12. WATER QUALITY N/A
Chemical Analysis ☐ Yes ☐ No Bacterial Analysis ☐ Yes ☐ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☐ Yes ☐ No
Installed from N/A ft. to ____ ft.
Effective size ____ Uniformity Coefficient ____

14. WELL GROUTED? ☐ Yes ☐ No
☐ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other ____
Depth: From ____ ft. to ____ ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
N/A Type well disinfected ☐ Yes Type: ____
upon completion ☐ No Amount: ____

16. PUMP: Date installed: N/A 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

17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: [illegible] Services Date: 7/16/98
Address: [illegible] Greenville, SC 29607
Signed: [signature] Cert. No. 959
Authorized Representative

DHEC 1903 (10/96) 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) 734-5300

1. LOCATION OF WELL:
County: Greenville System Name: MW-65
Latitude: Longitude:

Distance and Direction from Road Intersections:
see Attached Map

Street Address & City of Well Location:

Sketch Map:
see attached Map

2. CUTTING SAMPLES: ☒ Yes ☐ No

Geophysical Logs: ☐ Yes (please enclose) ☒ No

Formation Description	Thickness of Stratum	Depth to Bottom of Stratum
SAPROLITE	20	20
*Indicate Water Bearing Zones (Use a 2nd sheet if needed)		

3. REMARKS: Well Installed MW-65

4. OWNER OF WELL: BEAUNIT YARNS NPL SITE
Address: FOUNTAIN INN, SC
NPL SITE - SCD#000447268
Telephone No.:

Engineer: BUNNELL LAMMONS ENGINEERING
Address: 1200 WOODRUFF ROAD SUITE B-7
Greenville, SC 29607
Telephone No.: (864) 288-1265

5. WELL DEPTH (completed) 20 ft.
Date Started: 6/2/98
Date Completed: 6/2/98

6. ☐ Mud Rotary ☐ Jetted ☒ Bored ☐ Dug
☐ Air Rotary ☐ Driven ☐ Cable tool ☐ Other

7. USE:
☐ Domestic ☐ Public Supply–Permit No. ______ ☐ Industry
☐ Irrigation ☐ Air Conditioning ☐ Commercial
☐ Test Well ☒ Monitor Well ☐ ______

8. CASING: ☒ Threaded ☐ Welded
Diam.: 2"
Type: ☒ PVC ☐ Galvanized ☐ Steel ☐ Other
2 in. to 10 ft. depth
____ in. to ____ ft. depth
Height: (Above)/Below Surface 3 ft.
Weight Sch 40 lb./ft.
Drive Shoe? ☐ Yes ☒ No

9. SCREEN
Type: PVC Diam.: 2"
Slot/Gauge: 0.010 Length:
Set Between: 20 ft. and 10 ft.
____ ft. and ____ ft.
NOTE: MULTIPLE SCREENS USE SECOND SHEET
Sieve Analysis ☐ Yes (please enclose) ☒ No

10. STATIC WATER LEVEL
10.95 ft. below land surface after 24 hours

11. PUMPING LEVEL Below Land Surface.
N/A ft. after ____ hrs. Pumping ____ G.P.M.
Pumping Test: ☐ Yes (please enclose) ☐ No
Yield:

12. WATER QUALITY
Chemical Analysis ☐ Yes ☒ No Bacterial Analysis ☐ Yes ☒ No
Please enclose lab results.

13. ARTIFICIAL FILTER (gravel pack) ☒ Yes ☐ No
Installed from 20 ft. to 8 ft.
Effective size FX-50 Uniformity Coefficient

14. WELL GROUTED? ☒ Yes ☐ No
☒ Neat Cement ☐ Sand Cement ☐ Concrete ☐ Other 2' Bentonite Seal 8 to 6'
Depth: From 6 ft. to 0 ft.

15. NEAREST SOURCE OF POSSIBLE CONTAMINATION: ____ ft. ____ direction
____ Type well disinfected ☐ Yes Type:
upon completion ☐ No Amount:

16. PUMP: Date installed: N/A 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

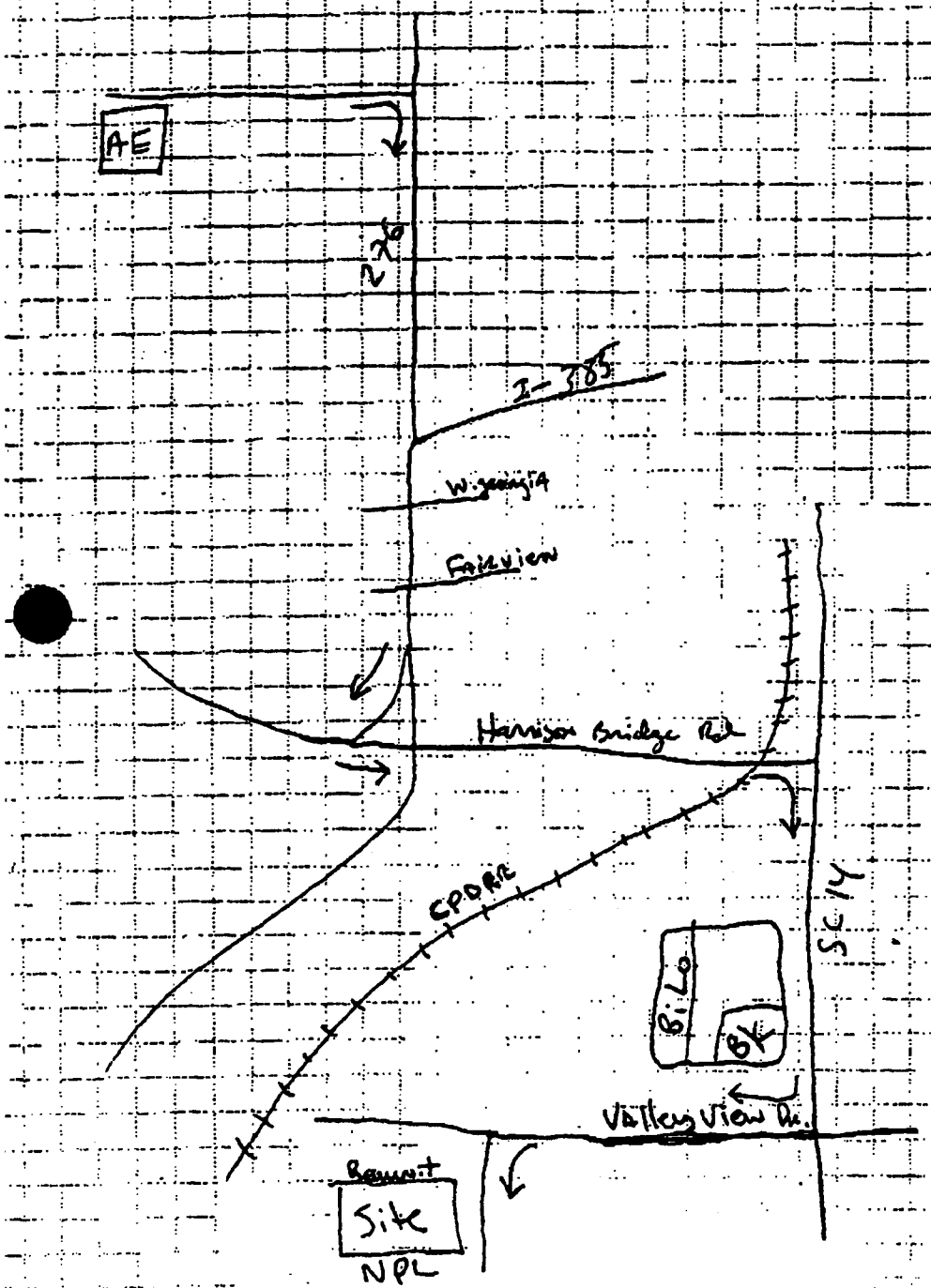
17. WATER WELL CONTRACTOR'S CERTIFICATION: This well was drilled under my direction and this report is true to the best of my knowledge and belief.
Registered Business Name: A.E. Drilling Services, Inc. Date: 7/13/98
Address: 1?? United Way, Greenville, SC 29607
Signed: [signature] Cert. No.: 954
Authorized Representative

DHEC 1903 (10/96) COPY 1 MAIL TO: S.C. DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (ADDRESS ABOVE)

BLE INC.
BUNNELL-LAMMONS ENGINEERING, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
GREENVILLE, SOUTH CAROLINA • ASHEVILLE, NORTH CAROLINA

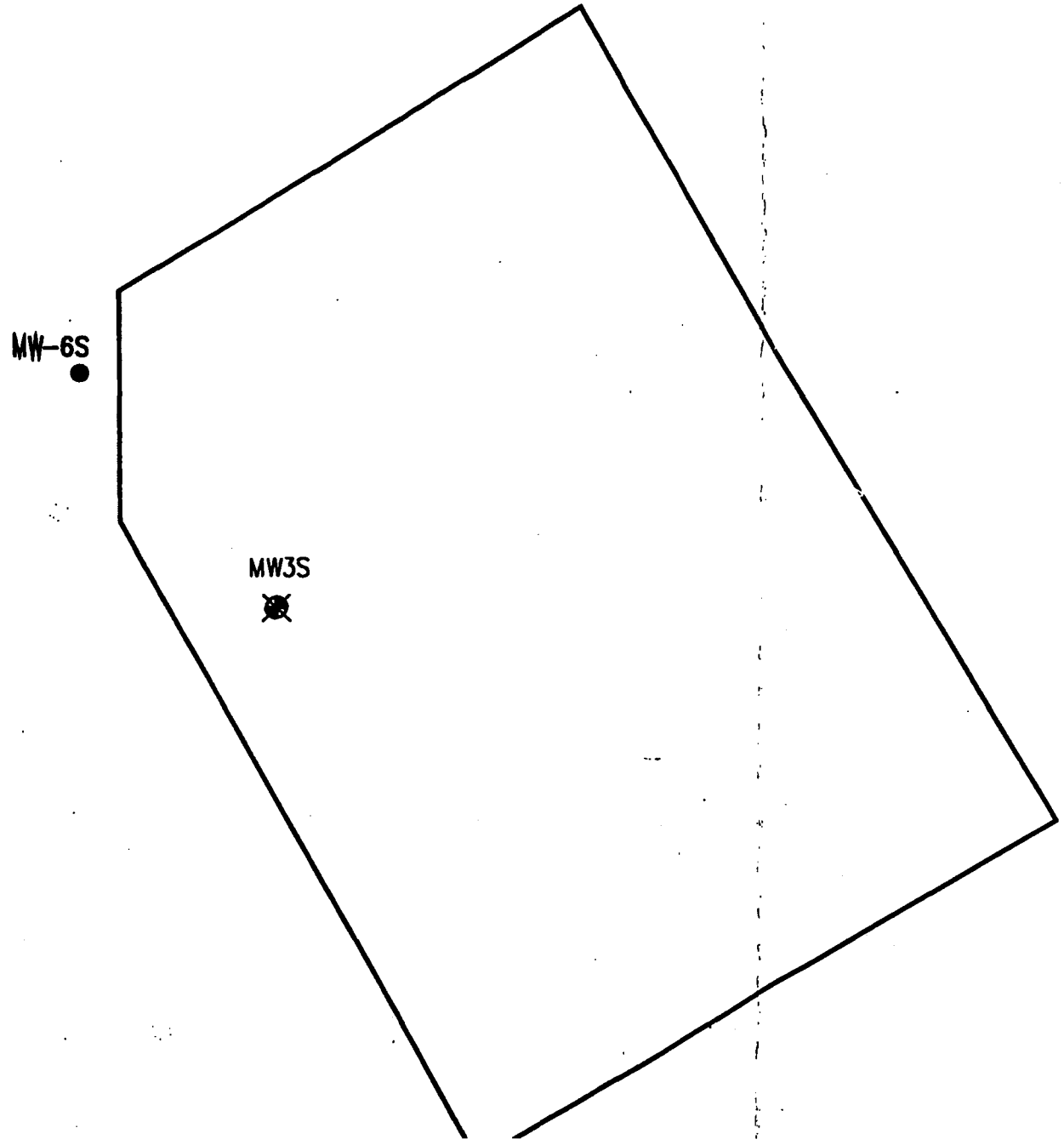
JOB NO. _____ SHEET ____ OF ____
PHASE _____ TASK _____
JOB NAME _____
BY _____ DATE _____
CHECKED BY _____ DATE _____

T.O.: Mark Lassiter



U.S. 276 to I-385
exit Harrison Bridge Rd
~~turn left~~
at Stop Sign (SC 14)
~~turn right~~
≈ 1 mile look
for Burger King.
Turn right after BK
on Valley View Dr.
At top of hill
turn left onto
gravel drive.
You're there!

E


MW-6S
MW3S

MONITORING WELL DEVELOPMENT LOG

DATE	6/3/98	TOTAL WELL DEPTH (TWD); TOP OF CASING =	20.3	1/100 ft
PERSONNEL	KAL	DEPTH TO GROUND WATER (DGW) =	11.0	1/100 ft
SITE	Beaunit	LENGTH OF WATER COLUMN (LWC) = TWD - DGW =	9.3	1/100 ft
JOB #	1212-01	1 CASING VOLUME (CV) = LWC x 0.17 =	1.58	gallons
WELL ID	MW-6S	10 WELL VOLUMES = CV x 10 =	15.81	gallons
WEATHER	Clear, windy	TOTAL VOLUME OF WATER REMOVED =	17.5	gallons
AIR TEMP.	95°	METHOD OF WELL DEVELOPMENT =	Whale submersible pump	

TIME	VOLUME PURGED (gallons)	WATER TEMP (C)	pH (units)	Eh	SPECIF. COND. (umho/cm)	TURBIDITY NTU	SAND CONTENT (%)	Remarks
17:07	Initial	16.7	6		250.2		10	Muddy/brown
17:17	Well ran dry after 3.5 gal.							
17:25		16.1	6		225.6		5	Brown
17:26	Dry after 2.5 gal.							
17:40		15.7	6		188.3		trace	light tan
17:42	Dry after 2.0 gal.							
17:59	Pumped well dry 2 times again - 2 gallons each							Clear with mica
18:18		16.2	6		148.6			
18:19	Pumped well dry after 1.5 gallons							Clear with mica
18:32		15.7	6		136.5			
18:33	Pumped well dry after 1.5 gallons							Clear with mica
18:52		15.8	6		132.1			
18:53	Pumped well dry after 1.5 gallons							Clear with mica
19:12		15.7	6		131.5			
19:13	Pumped well dry after 1.0 gallon							Clear with mica

APPENDIX C

CONSTRUCTION INSPECTION REPORT

CONSTRUCTION REPORT

MEETING MINUTES
PREFINAL CONSTRUCTION INSPECTION

Meeting Minutes Issue Date: August 28, 1997

Project:	Beaunit Circular Knit & Dyeing Plant NPL Site Remedial Action
Meeting Date:	August 12, 1998
Place:	Beaunit Circular Knit & Dyeing Plant NPL Site, Fountain Inn, South Carolina
Attendees:	USEPA -- Steven M. Sandler SCDHEC – Jim Bowman Beaunit Lagoon Site Group – Pete Miller, Nancy Prince, and Greg Mackin Parsons Eng. Science -- Talal Sadaka and Bijoy Ghosh Murphy Environmental Services – Roger Woolbright and Ken Lauber (BLE -- Murphy's subcontractor)
Prepared By:	Parsons ES

On August 12, 1998, the Pre-final Construction Inspection of the Remedial Action Construction was conducted at the Site. Representatives of the U.S. Environmental Protection Agency (EPA), South Carolina Department of Health & Environmental Control (SCDHEC), Beaunit Lagoon Site Group (BLSG), Parsons Engineering Science, Inc. (Parsons ES), and Murphy Environmental Services, Inc. (Murphy) were present for the inspection.

The purpose of the Pre-final Construction Inspection was to inspect the status of each remedial action (RA) construction task and, if necessary, to develop a list of items that were not accepted as complete by EPA. Talal Sadaka presented the status of the RA construction tasks and described the form to be used for the Pre-final Construction Inspection.

All attendees inspected the Site and reviewed the status of each RA construction task. The conclusions of the Pre-final Construction Inspection are presented below.

- Twelve of 16 tasks were accepted as complete.
- The construction associated with two tasks, i.e., monitoring well abandonment and installation of monitoring well MW6, was completed before the Pre-final Construction Inspection; however, the records associated with the tasks were provided to SCDHEC on August 12, 1998.
- The construction associated with the erosion and sediment control task and the landscaping tasks were completed before the Pre-final Inspection; however, as observed during the Pre-final Inspection, the final vegetative cover was not fully established. Also, at one area, the results of minor erosion were observed. Additional erosion control measures, e.g., regrading of the area and placement of

hay bales, were implemented on the day of the Pre-final Inspection. The additional erosion control measures were acceptable to EOPA and SCDHEC.

As there are no items pending construction completion, a Final Construction Inspection has not been scheduled. The final survey of the site has been scheduled for August 13-15, 1998. The topographic map of the Site will be included with the Remedial Action Report for the Site.

REMEDIAL ACTION CONSTRUCTION - REQUIREMENTS
BEAUNIT CORP. CIRCULAR KNIT & DYEING PLANT NPL SITE REMEDIAL ACTION

PREFINAL INSPECTION DATE: AUGUST 12, 1998

No.	RA Construction Task	Remedy Component	Accepted (A)/ Deficient (D)	Date of Acceptance	Description of Deficiency	Scheduled Date to Remove Deficiency	Status
1	Site Clearing	1	A	8/12/98		N/A	
2	Abandon Monitoring Wells	1,2	D		The construction associated with this task was completed before the Pre-final Inspection. The records of the activities was submitted to SCDHEC on 8-12-98.	8-12-98	Accepted by EPA and SCDHEC
3	Remove Existing Site Structures	1	A	8/12/98			
4	Installation of Monitoring Well MW-6S	2	D		The construction associated with this task was completed before the Pre-final Inspection. The records of the activities was submitted to SCDHEC on 8-12-98.	8-12-98	Accepted by EPA and SCDHEC

REMEDIAL ACTION CONSTRUCTION - REQUIREMENTS
BEAUNIT CORP. CIRCULAR KNIT & DYEING PLANT NPL SITE REMEDIAL ACTION

PREFINAL INSPECTION DATE: AUGUST 12, 1998

No.	RA Construction Task	Remedy Component	Accepted (A)/ Deficient (D)	Date of Acceptance	Description of Deficiency	Scheduled Date to Remove Deficiency	Status
5	IDW Management	1	A	8/12/98			
6	Erosion and Sediment Controls	1	D		Minor erosion was observed on a small area during the Pre-Final inspection. The area was re-graded and hay bales were placed at locations suggested by SCDHEC on 8-12-98.	8-12-98	Accepted by EPA and SCDHEC
7	Site Entrance Road	1	A	8/12/98			
8	Site Security	1,2,3	A	8/12/98			

REMEDIAL ACTION CONSTRUCTION - REQUIREMENTS
BEAUNIT CORP. CIRCULAR KNIT & DYEING PLANT NPL SITE REMEDIAL ACTION

PREFINAL INSPECTION DATE: AUGUST 12, 1998

No.	RA Construction Task	Remedy Component	Accepted (A)/ Deficient (D)	Date of Acceptance	Description of Deficiency	Scheduled Date to Remove Deficiency	Status
9	P5 "Hot Spot" Area, Excavation, Sampling, and Disposal	1	A	8/12/98			
10	Rubbery Waste Material Excavation, Loading, Off-Site Transportation, and Disposal	1	A	8/12/98			
11	Empty Drum Handling, Loading, Off-Site Transportation, and Disposal	1	A	8/12/98			
12	Backfilling	1	A	8/12/98			

REMEDIAL ACTION CONSTRUCTION - REQUIREMENTS
BEAUNIT CORP. CIRCULAR KNIT & DYEING PLANT NPL SITE REMEDIAL ACTION

PREFINAL INSPECTION DATE: AUGUST 12, 1998

No.	RA Construction Task	Remedy Component	Accepted (A)/ Deficient (D)	Date of Acceptance	Description of Deficiency	Scheduled Date to Remove Deficiency	Status
13	Wastewater Collection, Temporary Storage, Loading, Off-Site Transportation, and	1	A	8/12/98			
14	Geosynthetic Clay Liner	1	A	8/12/98			
15	Final Grading	1	A	8/12/98			
16	Landscaping	1			Pending, establishment of vegetative cover. If necessary, the site area will be reseeded during O&M activities.		

Remedy Component 1--Excavation, Backfill, Grading, and Cap

Remedy Component 2--Monitoring

Remedy Component 3--Land Use and Deed Restrictions

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7. Roger Woolbright	Murphy Environmental Sv.	(901) 774-6565
8. JIM BOWMAN	SCDHEC	803-896-4029

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FOURTH FIVE-YEAR REVIEW REPORT
BEAUNIT CORPORATION SUPERFUND SITE
GREENVILLE COUNTY, SOUTH CAROLINA

September 2018

Prepared for

U.S. Environmental Protection Agency
Region 4
Atlanta, Georgia

Franklin E. Hill, Director
Superfund Division

9/26/18
Date

11112001

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LIST OF ABBREVIATIONS & ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
BRA	Baseline Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DO	Dissolved Oxygen
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
IC	Institutional Control
LOQ	Limit of Quantitation
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/kg	Milligrams per Kilogram
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
MNA	Monitored Natural Attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PRG	Preliminary Remedial Goal
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
ROD	Record of Decision
RfD	Reference Dose
RGO	Remedial Goal Option
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SAP	Sampling and Analysis Plan
SC DHEC	South Carolina Department of Health and Environmental Control
TCLP	Toxicity Characteristic Leaching Procedure
UU/UE	Unlimited Use/Unlimited Exposure
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40) Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the Fourth FYR for the Beaunit Company Superfund Site. The triggering action for this statutory review is the signature date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one operable unit (OU), which is addressed in this FYR. OU1 addresses contaminated soil, sediment, surface water, and groundwater.

The South Carolina Department of Health and Environmental Control (SCDHEC) conducted the FYR and prepared this report regarding the remedy implemented at the Beaunit Company Superfund site in Fountain Inn, Laurens County, South Carolina. The SCDHEC personnel conducted this review from January 2018 to June 2018. The EPA is the lead agency for developing and implementing the remedy for the cleanup at the Site. The relevant entities, including the Beaunit Lagoon Site Group (Group), were notified of the initiation of the five-year review. The review began on 1/08/2018.

Site Background

The 1.3-acre Beaunit Corp. (Circular Knit and Dyeing Plant) Superfund site (the Site) is located on the northwest side of Fountain Inn, South Carolina, about 15 miles southeast of the city of Greenville. Between 1951 and 1977, the site owner operated a wastewater treatment plant on the property. Site operations included the treatment of industrial wastewater from the knitting, dyeing and finishing plant located about 400 yards to the east. Wastewater passed through an oil separator, into a lagoon and then discharged into an unnamed creek located near the west end of the Site. SCDHEC conducted a site investigation on June 13, 1985 which discovered a variety of contaminants in the stagnant lagoon water, sediments, an area creek and in fill material around the lagoon. Contaminants included benzene, beryllium, hexavalent chromium, manganese, 2-methylnaphthalene, and naphthalene in groundwater and arsenic and nickel in soil. The United States Environmental Protection Agency placed the Site on the National Priorities List (NPL) on February 21, 1990.

The EPA selected a remedy to address the Site's contamination in the Site's September 1995 Record of Decision (ROD). The selected remedy, as stated in the ROD, consisted of drainage control; placement of a soil and clay cap over the Site; grading of the Site; implementation of groundwater use restrictions through institutional controls; and groundwater, surface water, and sediment monitoring. The Site's potentially responsible party, the Group, conducted the remedial action from May to August 1998.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Beaunit Corporation Circular Knit and Dyeing Plant		
EPA ID: SCD000447268		
Region: 4	**State:** SC	**City/County:** Fountain Inn/Greenville County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Timothy Kadar (SCDHEC) and Randy Bryant (EPA)		
Author affiliation: SCDHEC and EPA		
Review period: 01/01/2018 – 06/29/2018		
Date of site inspection: 06/26/2018		
Type of review: Statutory		
Review number: 4		
Triggering action date: 09/25/2013		
Due date *(five years after triggering action date)*: 09/25/2018		

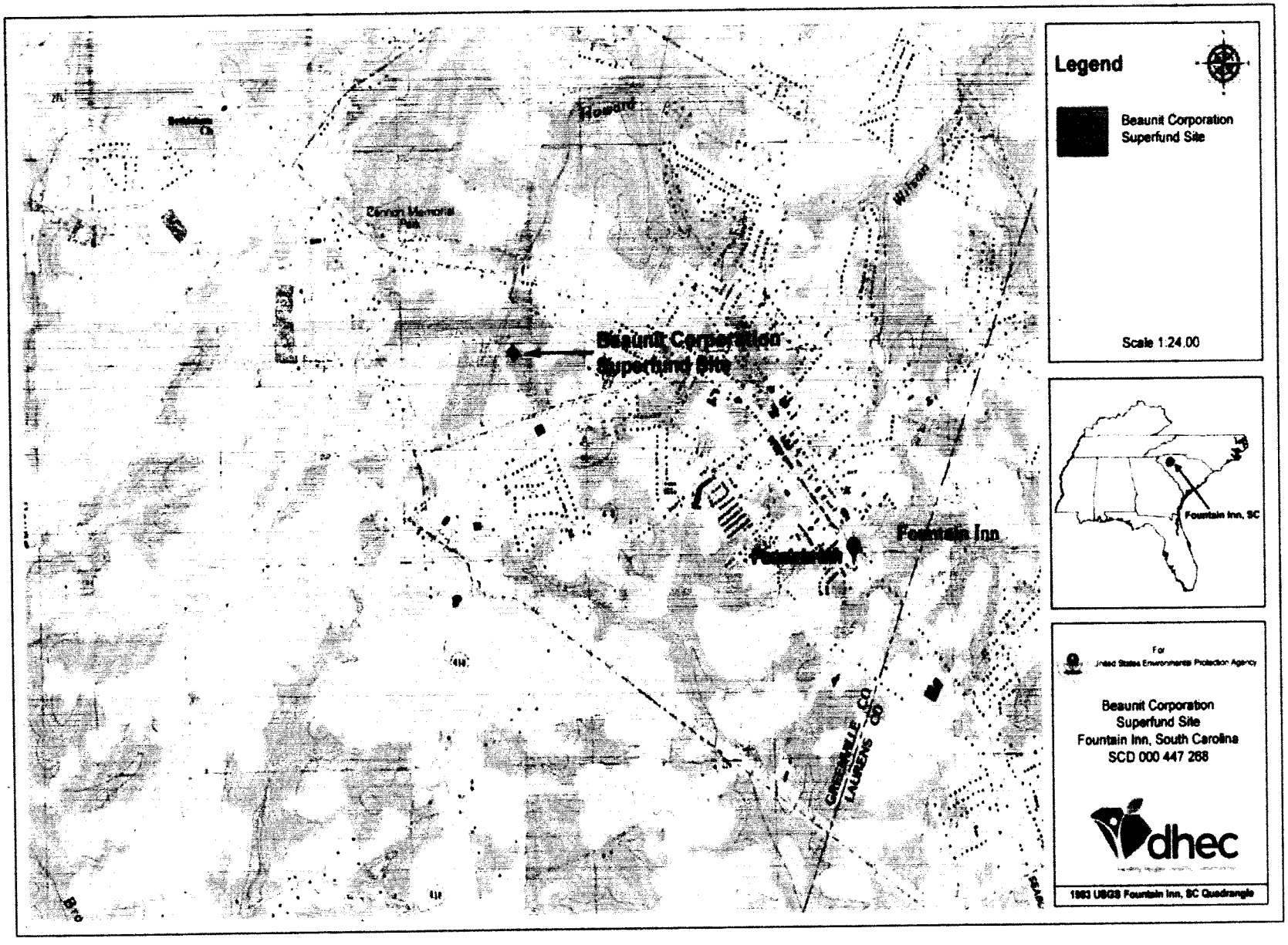


Figure 1 - General Site Location Map

Figure 2 - Site Location Map

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Engineering Science conducted RI field activities at the Site from October 19, 1992, to December 10, 1992. Contractor Roy F. Weston, Inc. finalized a baseline risk assessment (BRA) for the EPA on November 24, 1993, to evaluate the potential current and future risks associated with exposure to the site contaminants.

The Remedial Investigation/Feasibility Study (RI/FS) evaluated the following media: surface water, sediment, groundwater, surface soil and subsurface soil. The BRA determined that soil contaminants could leach into the shallow groundwater aquifer and concluded that groundwater was the only pathway of concern for human receptors. The contaminants of concern (COCs) for groundwater are; benzene, beryllium, chromium (VI), manganese, 2-methylnaphthalene and naphthalene.

The EPA determined that the risks to human health from contaminants in surface soils were within its acceptable risk range for human health. However, the BRA determined that site surface soils presented a risk to ecological receptors, and identified arsenic and nickel as COCs.

Table 1 summarizes the COCs identified in the Site's 1988 ROD.

Table 1: COCs by Media

COC	Media
Arsenic, Nickel	Surface soil
Benzene, Beryllium, Chromium VI, Manganese, 2-Methylnaphthalene, Naphthalene	Groundwater

Response Actions

Regulatory involvement at the Site began in the early 1970s when citizens complained to SC DHEC regarding discoloration of the "stream below Beaunit" (referring to the unnamed creek and Howards Branch). SC DHEC conducted a site investigation on June 13, 1985, and discovered a variety of contaminants in the stagnant lagoon water, sediments, area creek, and fill material around the lagoon. Contaminants discovered included polychlorinated biphenyls (PCBs), chromium, lead, and volatile organic compounds (VOCs).

The EPA placed the Site on the NPL in February 1990. An Administrative Order on Consent (AOC) was signed on February 21, 1992 with the PRP Group (consisting of Continental Assurance Company, El Paso Natural Gas Company, Kayser-Roth Corporation, PepsiCo, Inc., and Wilson Sporting Goods Co.) to address the Site. The BRA was finalized on November 24, 1993. The Site's RI/FS was completed and the Record of Decision was signed on September 29, 1995.

The EPA selected the Site's remedy in the Site's September 1995 Record of Decision (ROD). The ROD listed the following remedial action objectives (RAOs):

-Prevent human exposure, via any exposure route [ingestion and non-ingestion (i.e., showering)] to groundwater containing contaminants in concentrations that exceed applicable or relevant and appropriate requirements (ARARs) and appropriate risk levels.
-Prevent exposure of terrestrial species to the contaminants of concern in surface soils above appropriate risk levels.

The selected remedy, as stated in the ROD, consisted of:

- Grading of the Site and surface water drainage control.
- Placement of a soil and clay cap over the Site.
- Groundwater use restrictions through institutional controls.
- Land use restrictions for the clay cap through institutional controls.
- A groundwater, surface water, and sediment monitoring program.

Remedial goal options (RGOs) are the Site's final cleanup goals. The initial RGO for arsenic in surface soil was 0.1 milligrams per kilogram (mg/kg), calculated based on a hazard index of 1he background concentration for arsenic was 3.2 mg/kg. Therefore, the ROD determined that the RGO for arsenic should be based on background concentrations and not on the concentration calculated based on a hazard index of 1. Table 2 presents cleanup goals for surface soil COCs.

Table 2: Surface Soil Cleanup Goals

COC	Type of Risk (Terrestrial Wildlife)	Risk-Based RGO (mg/kg)	ARAR-Based RGO (mg/kg)
Arsenic	noncarcinogenic	3.2 mg/kg[a]	NA
Nickel	noncarcinogenic	4.4 mg/kg	NA

Notes:
mg/kg = milligrams per kilogram
a – As stated in the ROD, the RGO for arsenic in surface soil is not risk-based, but based on the background soil concentration of 3.2 mg/kg.
NA – Not applicable

The RGOs for groundwater COCs at the Site were developed based on an exposure scenario for a potential future resident living on site. Table 3 presents the cleanup goals for site COCs in groundwater.

Table 3: Groundwater Cleanup Goals

COC	Type of Risk (Human Health)	Risk-Based[a] RGO (µg/L)[e]	ARAR-Based RGO (µg/L)
Benzene	carcinogenic	2 to 200	5[b]
2-Methylnaphthalene	noncarcinogenic	3	NA
Naphthalene	noncarcinogenic	3	NA
Beryllium	carcinogenic	0.01 to 1	4[b]
Chromium (VI)	noncarcinogenic	40	100[c]
Manganese	noncarcinogenic	40	200[d]

Notes:
a – Carcinogenic risk-based remediation goals are based on the risk range 1E-6 to 1E-4.
Noncarcinogenic risk-based remediation goals are based on a hazard index of 1.0.
b – ARAR-based goal is based on the maximum contaminant level (MCL).
c – ARAR-based goal is for total chromium.
d – ARAR-based goal is based on MCL goal.
e – ug/L = Micrograms per liter.

Status of Implementation

The Group took responsibility for the Site's remediation under the April 1996 Consent Decree. The Site's completed remedial design was approved by EPA on March 6, 1998. Mobilization to construct the remedial action began on May 11, 1998. Implementation of the remedial action is discussed below.

Drainage Control

During the remedial action, the Group graded the Site and constructed an earthen berm and ditch to divert surface water from the Site. These drainage control methods prevented excessive soil erosion and contaminant transport due to surface water runoff from the Site.

Excavation, Site Grading and Installation of a Soil and Clay Cap

Remedial actions included the excavation of a contaminated area located along the former treatment plant influent pipeline. The initial excavation consisted of a 20 by 20 feet area by 2 feet in depth. Confirmation soil samples taken from the excavation floor exceeded the RGOs for arsenic and nickel (3.2 mg/kg and 4.4 mg/kg, respectively). Following additional soil excavation, a second round of confirmatory sampling was completed. One sample from the northern sidewall was below the RGOs for arsenic and nickel. All other confirmation samples slightly exceeded the Site's RGOs but were sufficiently close that EPA and SCDHEC approved backfilling the excavation. The lagoon was backfilled with a coarse aggregate gravel up to the original water level and then topped with 14,790 tons of imported clean fill. These remedial activities were completed on June 3, 1998. The excavated soils were determined to be nonhazardous using the toxicity characterization leaching procedure (TCLP), then used to grade the area surrounding the lagoon.

Remedial activities also included the excavation of a visible solid waste along the eastern edge of the lagoon consisting of approximately 410 tons of rubbery waste used in the the manufacture of tennis balls. The solid waste was transported to an approved Subtitle D landfill for proper disposal.

As required by the ROD, the Site was graded and of a low permeability geosynthetic clay liner was installed over the lagoon and adjacent area for a total of 61,000 square feet. An additional 940 square feet of the clay liner was installed over the P5 excavation along the route of the former influent pipeline.

Additional remedial actions included the placement of 12 inches of fill soil, 6 inches of topsoil, and a vegetative layer over the liner. The cap was completed on June 24, 1998. The vegetative cover is in place and continues to provide erosion control for the capped area.

Groundwater Monitoring Program

The selected remedy in the ROD required groundwater monitoring. Eight quarterly sampling events were conducted between July 1998 and July 2000. Annual sampling was conducted from 2001 to 2003. The first FYR, conducted in September 2003, recommended continued annual groundwater monitoring. Annual sampling was conducted between 2005-2006. Full scan analysis, including the COCs, was performed for the samples collected through 2005. Based on the contaminant trends, the analyte list was reduced in 2006 to include benzene, manganese, thallium, naphthalene, and 1,2-dichloropropane. Annual sampling and reporting continued until 2007. The second FYR in September 2008 recommended continued groundwater monitoring on an 18-month schedule. The USEPA, SCDHEC, and the Group agreed to reduce the analyte list to only benzene and to reduce the number of monitoring well sampling locations to those identified in Table 4. The third FYR in September 2013 recommended maintaining the groundwater monitoring program, updating the analytical method for benzene, and updating the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) to evaluate residual benzene concentrations in groundwater downgradient of the protective cap. The SAP/QAPP was approved by the USEPA on September 15, 2014. In the First Quarter of 2015, a quarterly sampling program of three monitoring wells (MW4S, TW8 and TW11) was initiated for one year to determine if there are seasonal fluctuations in benzene concentrations and evaluate whether monitored natural attenuation (MNA) or controlled oxygen release was a viable groundwater remedial alternative for the residual benzene. The most recent sampling of all monitoring wells was conducted in September 2017.

Table 4: Summary of Groundwater Monitoring Wells

Groundwater Monitoring Wells at Beaunit Lagoon Site	
Groundwater Zone	**Monitoring Well**
Permanent Monitoring Wells	
Shallow	MW-4S
	MW-5S
	MW-6S
Deep	MW-5D
Temporary Monitoring Wells	
Shallow	TW-8
	TW-9
	TW-11

Surface Water Monitoring

The ROD required the monitoring and sampling of surface water and sediments at 3 locations in the adjacent unnamed tributary of Howard Branch. Samples from these locations were collected and analyzed semiannually for the first 2 years and annually for the following 3 years. In 2007, the EPA, SCDHEC, and the Group agreed that it was no longer necessary to sample surface water or sediment.

Institutional Controls

The Group implemented restrictive covenants for both the capped former lagoon area and two small parcels of land directly downgradient of the Site. These restrictions prohibit the drilling of groundwater wells, restrict future development, and prohibit activities that would affect the integrity or effectiveness of the cap.

IC Summary Table

Table 5: Summary of Planned and/or Implemented Institutional Controls

Media, Engineered Controls and Areas that Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or Planned)
Groundwater	Yes	Yes	0338000100700	Restrict installation of groundwater wells.	8/31/1998 Restrictive Covenant
Groundwater	Yes	Yes	0338000100400* 0338000100100*	Restrict installation of groundwater wells and prevent any use of groundwater without prior written approval from the EPA.	6/14/2010 Restrictive Covenant
Capped Soil	Yes	No	0338000100700	Restrict activities that would disturb the integrity or effectiveness the cap.	8/31/1998 Restrictive Covenant
Soil	Yes	No	0338000100400* 0338000100100*	Restrict land use and prohibit mining, extraction of coal, oil, gas or any other minerals or nonminerals on the property.	6/14/2010 Restrictive Covenant
*The restrictive covenant pertains to a small section of the entire parcel.					

The IC documents are included in Appendix H.

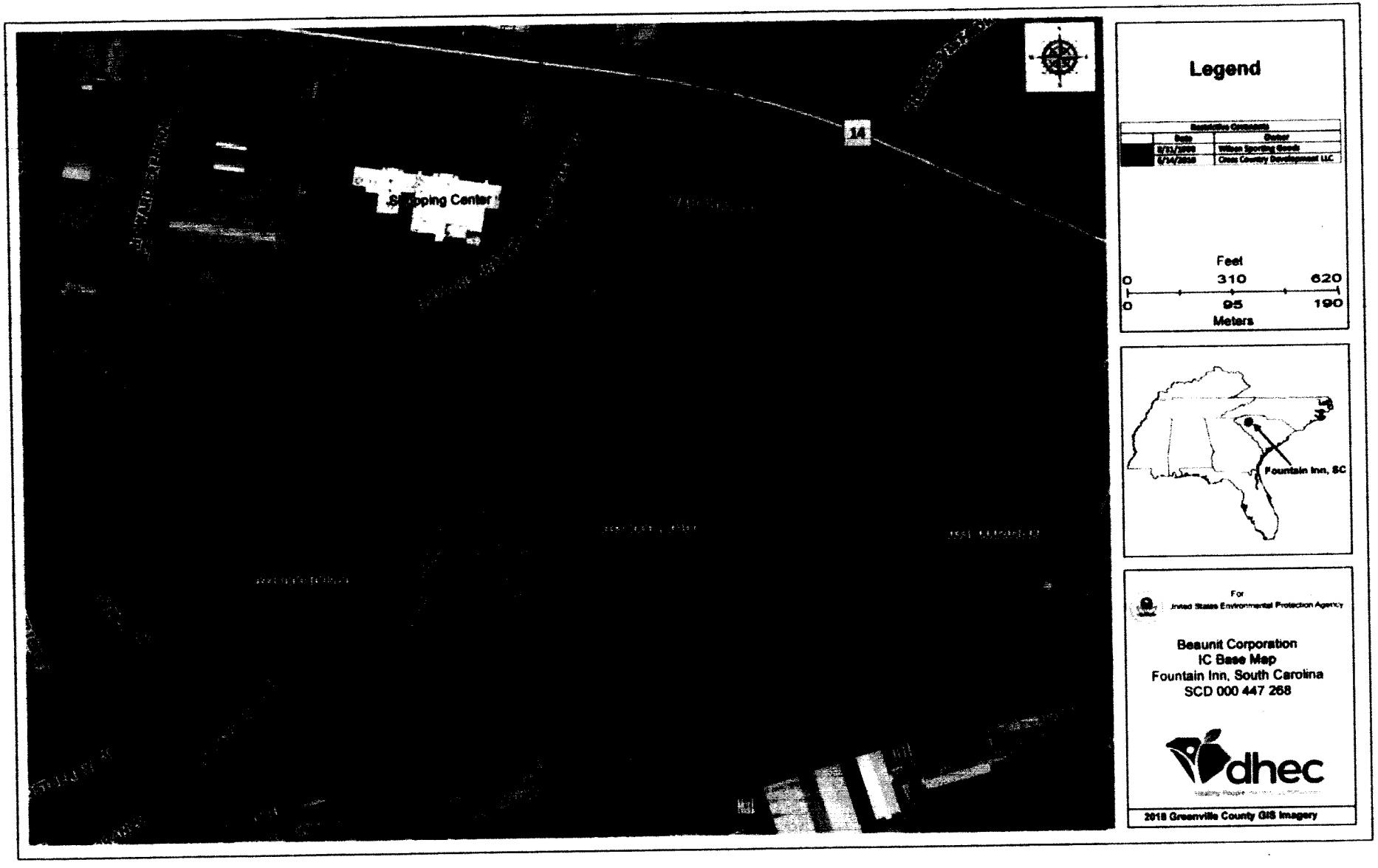


Figure 3 - Institutional Controls Base Map

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last five-year review as well as the recommendations from the last five-year review and the current status of those recommendations.

Table 6: Protectiveness Determinations/Statements from 2013 FYR

OU #	Protectiveness Determination	Protectiveness Statement
OU1	Short-term Protective	The selected remedy currently protects human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. The cap over the Site prevents the exposure of terrestrial species to COCs in surface soils above appropriate risk levels and helps prevent contaminant leaching into the shallow groundwater below. Currently, there are no complete direct contact human exposure pathways for groundwater at the Site. Water is available to residents and industries through public water systems and there are no groundwater supply wells on the site property. Institutional controls, in the form of restrictive covenants, prevent direct human exposure to groundwater by prohibiting the drilling of groundwater wells and restrict land uses on the cap parcel and the two small sections of land immediately downgradient of the cap. However, in order for the remedy to be protective in the long-term, laboratory testing methods used to analyze benzene concentrations must be evaluated and appropriate actions must be taken to ensure that method limits of quantitation (LOQ) are below the benzene MCL of 5 µg/L

Table 7: Status of Recommendations from 2013 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
OU1	The MCL of 5 µg/L for benzene dictates that the testing method used to analyze groundwater samples should have a LOQ below 5 µg/L. One of the testing methods currently used has a LOQ of 10 µg/L.	Evaluate laboratory testing methods used to analyze benzene concentrations and take appropriate actions to ensure that method LOQs are below the benzene MCL of 5 µg/L.	Completed	SW-846 Method 8260B was used to analyze groundwater samples for benzene providing for a reporting limit of 1.0 µg/L.	12/9/2014

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available by a newspaper posting in the Wednesday, April 11, 2018 edition of *The Tribune Times*, stating that there was a five-year review and inviting the public to submit any comments to the USEPA. The results of the review and the report will be made available at the Site

information repository located at the Greenville County Library at 400 North Main Street, Fountain Inn, South Carolina 29644.

The FYR process included interviews with regulatory agencies involved in Site activities or aware of the Site. The purpose was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy implemented to date. All the interviews were conducted in person, via telephone, or completed by email after the Site inspection. The interviews are summarized below. Appendix D provides the complete interviews.

Randolph Bryant is the EPA Region 4 Remedial Project Manager (RPM) for the Site. His overall impression of the Site is positive. The remedy has been well monitored and maintained. Sara MacDonald works in the Bureau of Land and Waste Management Federal Remediation Program at SCDHEC. Ms. MacDonald feels the remedy is working towards reaching remedial goals.

Data Review

Based on a recommendation from the second FYR, groundwater monitoring changed to an 18-month schedule. The USEPA, SCDHEC, and the Group agreed to reduce the analyte list to a single COC, benzene. The third FYR recommended an update to the analytical method for benzene with an updated SAP/QAPP. The SAP/QAPP called for quarterly sampling of three wells for one year to determine if there are seasonal fluctuations in benzene concentrations and evaluate whether monitored natural attenuation (MNA) is a viable groundwater remedial alternative for the residual benzene in groundwater. The quarterly sampling began in the First Quarter of 2015.

In 2007, the EPA, SCDHEC, and the Group agreed to reduce the analyte list to benzene only and reduce the required sampling locations. Based on those decisions, the current groundwater monitoring system includes four permanent monitoring wells and three temporary monitoring wells. The four permanent wells include three shallow wells, MW-4S, MW-5S and MW-6S, and one deep well, MW-5D. The Group installed the three temporary wells, TW-8, TW-9 and TW-11 in 2007. Table 9 shows benzene concentrations in groundwater monitoring wells since 2006. Figures 2 and 3 show the active monitoring well locations.

Analytical results for the September 2014 sampling event detected benzene slightly above the Site remediation goal of 5 micrograms per Liter (µg/L) in two wells, MW-4S (5.2 µg/L) and TW-11 (6.2 µg/L). These wells are located immediately downgradient of the cap. Benzene was detected below the Site remediation goal in all wells during the 2015 quarterly sampling events, the March 2016 18-month and the September 2017 18-month sampling events except for off-site downgradient well MW-5S. The March 2016 analytical results indicated the presence of benzene at 7.3 µg/L. The September 2017 analytical results showed benzene had decreased in MW-5S to below the laboratory reporting limit (<1.0 µL). Overall, the benzene plume appears to be shrinking with concentrations showing an overall decreasing trend from their historic highs over the past years (Figure 4). The off-Site downgradient deep well (MW-5D) shows and has always shown benzene concentrations below the laboratory detection limit. It is unknown if the reported concentration from the March 2016 sampling event in MW-5S is due to benzene plume migration or is an anomalous result. In summary, twenty-six groundwater samples have been collected from seven monitoring wells since March 2015. Benzene was below the cleanup goal or not detected in twenty-five of the twenty-six groundwater samples.

Select groundwater samples (MW-4S, MW-5S, MW-6S, TW-8 and TW-11) were analyzed for MNA

parameters to evaluate the potential for benzene degradation in groundwater. A summary of groundwater field parameters measured during sampling and MNA data is provided in Table 4. A review of the field parameters shows that dissolved oxygen (DO) concentrations ranged between ~0 and ~10 milligrams per liter (mg/L), with slightly less than neutral pH conditions within the plume (pH range from ~ 4 to 6). Benzene degradation continues to occur but at a relatively modest rate due to low DO and the acidity of the groundwater.

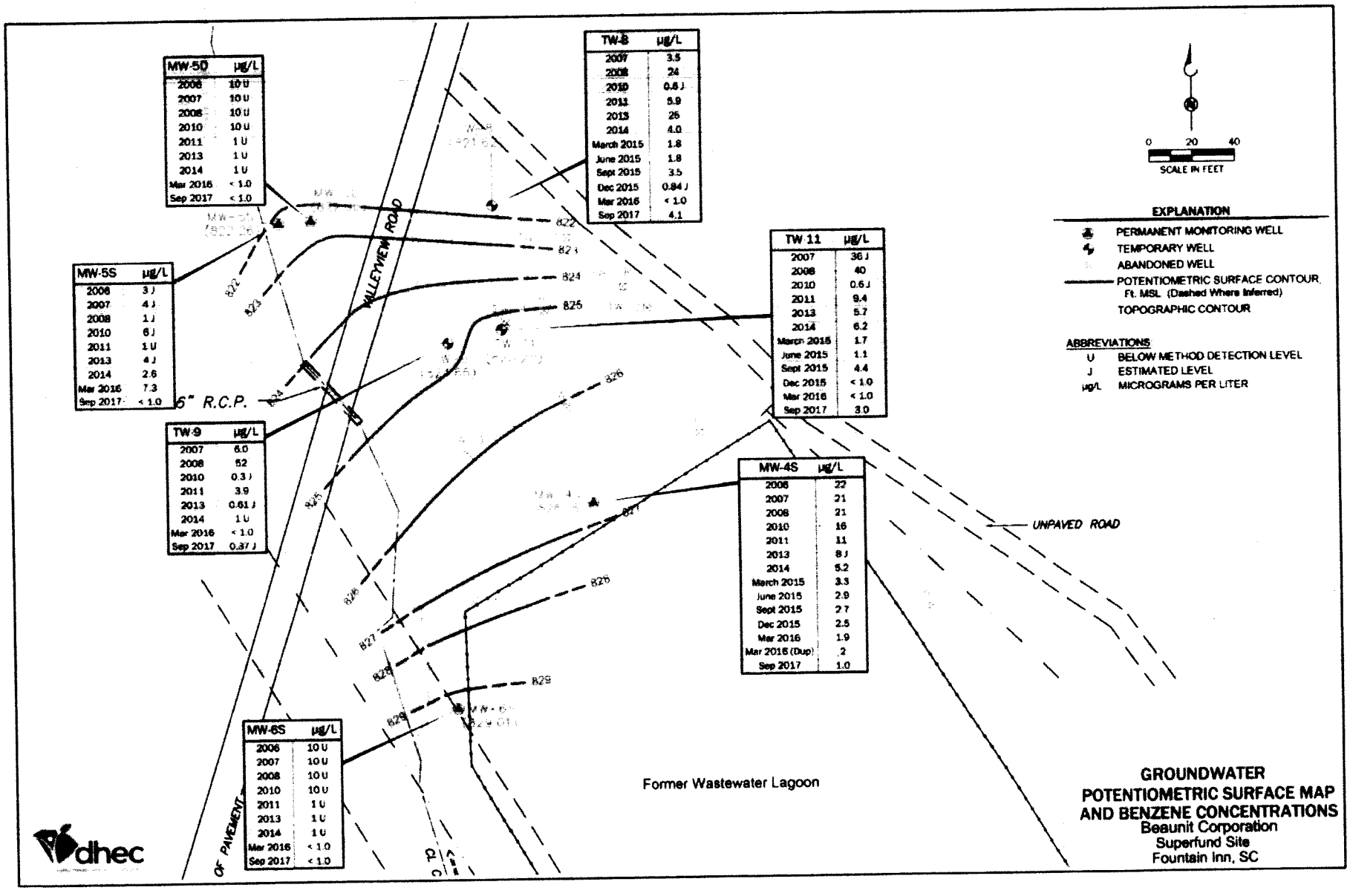


Figure 4 - Groundwater Monitoring Results

Table 4 - Summary of Analytical Results and Field Measurement - September 2014

Monitoring Well	Total Iron (µg/L)	Total Manganese (µg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	TOC (mg/L)	Total Alkalinity (mg/L)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Temperature (°C)	Benzene Concentration (µg/L)
MW-4S	79.2	112	35.5	ND	16.1	49.6	23.2	5.02	179	2.39	0.91	233	16.67	5.2
MW-5D	NA	NA	NA	NA	NA	NA	NA	5.90	64	0.0	8.17	218	17.87	ND<1.0
MW-5S	23,400	1,290	ND	ND	8.5	23.9	60.5	5.57	158	7.9	0.0	24	17.76	2.6
MW-5S (Duplicate)	24,600	1,220	ND	0.027	8.5	34.6	59.8	NA	NA	NA	NA	NA	NA	2.4
MW-6S	434	52.1	6.2	0.24	1.8	16.7	5.0	4.99	40	9.2	0.00	201	17.46	ND<1.0
TW-8	NA	NA	NA	NA	NA	NA	NA	5.01	103	28.5	0.00	181	18.11	4.0
TW-9	NA	NA	NA	NA	NA	NA	NA	5.93	42	74.5	10.52	109	18.59	ND<1.0
TW-11	ND	291	ND	ND	19.1	43.8	20.5	4.50	108	23.8	2.51	220	18.28	6.2

°C = Celsius *mS/cm = millisiemens per centimeter* *mV = millivolt* *ND = Not detected* *NA = Not Analyzed*

Table 4 Continued - Summary of Analytical Results and Field Measurements - March 2016

Monitoring Well	Total Iron (µg/L)	Total Manganese (µg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	TOC (mg/L)	Total Alkalinity (mg/L)	pH	Conductivity (mS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Temperature (°C)	Benzene (µg/L)
MW-4S	51.2	123	39.6	<0.02	14.8	3.9	22.2	5.13	184	1.21	0.20	194.9	20.02	1.9
MW-4S (Duplicate)	48.1J	127	39.8	<0.02	14.6	3.6	22.3	NA	NA	NA	NA	NA	NA	2.0
MW-5D	NA	NA	NA	NA	NA	NA	NA	6.62	53	1.61	9.03	54.2	17.53	<1.0
MW-5S	48,100	1,740	1.1J	<0.02	15.6	6.8	56.6	5.86	277	8.09	0.64	7.7	15.85	7.3
MW-6S	2,920	176	6.3	<0.02	1.1	2.7	2.7J	5.03	34	8.9	0.30	159.7	15.89	<1.0
TW-8	<50	29.8	4.9	<0.02	12.0	0.64J	5.4	4.88	66	1.22	3.28	249	16.65	<1.0
TW-9	NA	NA	NA	NA	NA	NA	NA	5.40	29	96.7	9.6	153.5	17.35	<1.0
TW-11	1,090	220	<2.0	<0.02	20.0	15.6	2.7J	4.92	76	3.83	2.01	204.5	16.45	<1.0

°C = Celsius *mS/cm = millisiemens per centimeter* *mV = millivolt* *NA = Not Analyzed* *mg/L = milligrams per Liter*
µg/L = micrograms per Liter *TOC = Total Organic Carbon* *NTU = Nephelometric Turbidity Unit*

Table 4 Continued - Summary of Analytical Results and Field Measurement - September 2017

Monitoring Well	Total Iron (µg/L)	Total Manganese (µg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	TOC (mg/L)	Total Alkalinity (mg/L)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Temperature (°C)	Benzene (µg/L)
MW-4S	< 50.0	99.1	34.2	< 0.10	11.0	2.7	16.1	3.22	0.161	0.98	0.81	122.4	17.82	1.0
MW-5D	NA	NA	NA	NA	NA	NA	NA	5.96	0.069	0.15	10.33	110.1	18.17	< 1.0
MW-5S	2,850	587	<1.0	0.13	7.1	0.90 J	23.4	3.19	0.061	0.41	0.59	178.0	18.51	< 1.0
MW-5S (Duplicate)	NA	NA	NA	NA	NA	NA	NA	3.19	0.061	0.41	0.59	178.0	18.51	< 1.0
MW-6S	213	68.5	6.0	0.12	1.1	1.9	3.1 J	2.26	0.037	8.72	3.67	181.1	20.49	< 1.0
TW-8	NA	NA	NA	NA	NA	NA	NA	4.29	0.112	0.00	0.93	-23.9	16.58	4.1
TW-9	NA	NA	NA	NA	NA	NA	NA	4.47	0.074	95.7	9.21	135.1	19.43	0.37 J
TW-11	35.6 J	342	2.9	< 0.10	22.1	4.7	21.1	4.79	0.133	2.97	2.91	49.8	17.14	3.0

°C = Celsius *µS/cm = microsiemens per centimeter* *mV = millivolt* *NA = Not Analyzed*
µg/L = micrograms per Liter *TOC = Total Organic Carbon* *NTU = Nephelometric Turbidity Unit* *mg/L = milligrams per Liter*
J = Estimated value

Site Inspection

The site inspection took place on June 26, 2018. In attendance were the EPA RPM Randolph Bryant, the PRP's contractor, Reinhard Ruhmke, and Sara MacDonald, Joel Padgett, and Timothy Kadar from SCDHEC. The purpose was to assess the protectiveness of the remedy. For a full list of site inspection activities, see the Site Inspection Checklist in Appendix D.

Participants accessed the Site via Valley View Road. The Contractor provided a brief history of the Site and a Health and Safety briefing. The cap covers the entire Site. The Site is enclosed within a chain link fence with a locked gate. The chain link fence and gate were found to be in good condition. The wells, both on and off the Site, were properly secured and in good condition. Participants performed a walk-through survey of the Site stopping at multiple locations to inspect wells, site conditions, etc. Conditions remain similar to those that existed five years ago.

SCDHEC staff visited the designated Site repository, the Greenville County Public Library, located at 400 North Main Street, Fountain Inn, South Carolina. No Site related documents were on file at the repository. The Library requests that documentation be made available in a secure electronic format, preferably a website containing all relevant information. The Library can then provide access via the publicly available computers onsite and the appropriate website link.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The review of documents, ARARs, risk assumptions, and the site inspection indicate that the remedy is functioning as intended by the Site's decision document. During implementation of the remedy selected in the 1995 ROD, the former lagoon area was capped with a low-permeability geosynthetic clay liner, 18 inches of clay, 12 inches of native topsoil, and a vegetative cover. The cap prevents the exposure of terrestrial species to COCs in surface soils at concentrations above appropriate risk levels and helps prevent contaminants from leaching into the shallow groundwater below.

The consent decree required the Group to perform all required O&M activities including the periodic inspection and maintenance of the cap, vegetative cover, fence, gate, monitoring wells, and warning signs. The Site is in good condition, with no maintenance issues observed during the FYR site inspection.

The ROD required institutional controls to maintain the integrity of the cap and prevent the use of groundwater on the Site. A restrictive covenant, dated August 31, 1998, prohibits activities that would affect the integrity or effectiveness of the cap, and prohibits the drilling of groundwater supply wells on the Site. There are no groundwater supply wells on the site property, therefore there are no completed direct contact human exposure pathways for groundwater at the Site. Water is available to nearby residents and industries through public water supply systems that provide drinking water from a non-local surface water source.

A second restrictive covenant, dated June 14, 2010, is in effect for two small sections of land immediately downgradient of the Site. The covenant prohibits the drilling of groundwater wells on the properties without prior written approval from the EPA. Although not required by the ROD, the restrictive covenant also prohibits residential and agricultural land uses, child day care facilities, schools and elderly care facilities on the properties. It also prohibits use of the properties for mining or extraction of coal, oil, gas, or any other minerals or non-mineral substances.

The ROD required the implementation of a groundwater, surface water, and sediment monitoring program. Eight post-RA sampling events were conducted between July 1998 and July 2000. Annual sampling was conducted between 2001-2003 and 2005-2006. Full scan analysis, including the COCs, was performed for the samples collected through 2005. Based on the contaminant trends, the analyte list was reduced in 2006 to include only benzene, manganese, thallium, naphthalene, and 1,2-dichloropropane. Based on the surface water and sediment monitoring results through 2006, the EPA approved the removal of those media from the required monitoring schedule. The Group performs required groundwater monitoring every 18 months to ensure that the remedy is functioning properly. Groundwater monitoring data over the previous five years indicates that benzene degradation continues to occur at a relatively modest rate. The latest analytical results from September 2017 did not detect benzene above the MCL of 5 μg/L in any monitoring well.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:

ARARs used at the time of the remedy selection are still valid. The groundwater ARARs have not changed for any of the COCs since the 1995 ROD.

The 1993 BRA determined that the risks to human health from contaminants in surface soils were within the EPA's acceptable risk range and that remediation of surface soils would not be required for the protection of human health. However, the BRA also determined that site surface soils did present a risk to ecological receptors. Arsenic and nickel were identified as the chemicals of concern. It was also possible that soil contaminants could leach into the shallow groundwater aquifer. The cap over the former lagoon area prevents the exposure of terrestrial species to COCs in surface soils above appropriate risk levels and helps prevent contaminant leaching into the shallow groundwater below.

The soil cleanup level identified in the ROD for nickel (4.4 mg/kg) is below the current soil screening levels for industrial land use (22,000 mg/kg) and residential land use (1,500 mg/kg). The EPA set the soil cleanup goal for arsenic (3.2 mg/kg) based on background soil arsenic concentrations. Even though the soil cleanup goal for arsenic is not below the current soil screening levels for industrial land use (1.6 mg/kg) or residential land use (0.39 mg/kg), the cap over the Site prevents any human or ecological exposure to soils that may exceed the current screening levels. Additionally, land use restrictions for the cap ensure cap integrity and further prevent possible exposure to soil that may exceed current screening levels.

The 1993 BRA determined that potential future residential groundwater exposures to benzene, beryllium, chromium, manganese, 2-methylnaphthalene and naphthalene were of concern. Both the 1998 and 2010 restrictive covenants prohibit the drilling of groundwater wells on the cap and the land located between the cap and Valley View Road. Additionally, the 2010 restrictive covenant prohibits

residential land use in the areas located immediately downgradient of the cap and the 1998 restrictive covenant prohibits any activity which would disturb the integrity and effectiveness of the cap.

Site contamination included some levels of PCB contamination in soil, sediment and fill material. Remedial investigation records identify a maximum soil concentration of 13 µg/kg, a maximum sediment concentration of 74 µg/kg and a maximum fill material concentration of 28 µg/kg. PCB-related cleanup goals were not established for on-site media. However, the concentrations detected during the RI are below the current soil screening levels for PCBs (740 µg/kg for industrial soil and 220 µg/kg for residential soil).

The 1995 ROD based some of the Site's cleanup goals on site-specific risk. To help determine whether these cleanup goals are still valid, this FYR compared the toxicity values used in the 1993 RI/FS against current toxicity values. Appendix F presents this comparison. Of the four COCs with risk-based cleanup goals, arsenic and beryllium have toxicity values that are more stringent now (1.5E+00 mg/kg-day-1 and 2.0E-03 mg/kg-day, respectively) than at the time of the 1993 RI/FS (1.8E+00 mg/kg-day-1 and 5.0E-03mg/kg-day, respectively). However, the construction of the cap over the contaminated surface soil effectively eliminates any potential human or ecological exposure to soils that may contain COCs at concentrations exceeding the current toxicity values. Despite the more stringent current values, there is no complete exposure pathway.

The RAOs used at the time of remedy selection are still valid.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
OU1

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU1	*Protectiveness Determination:* Protective
Protectiveness Statement: The remedy at OU1 protects human health and the environment because exposure pathways that could result in unacceptable risks have been addressed. The cap over the Site prevents the exposure of terrestrial species to COCs in surface soils above appropriate risk levels and helps prevent contaminant leaching into the shallow groundwater. Currently, there are no complete direct contact human exposure pathways for groundwater at the Site. Restrictive covenant (ICs) prohibit the drilling of groundwater wells and restrict land uses on the cap parcel and the two small sections of land immediately downgradient of the cap.	

VIII. NEXT REVIEW

The next FYR for the Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Remedial Investigation Report, Beaunit Corp. Circular Knit & Dyeing Plant, Fountain Inn, Greenville County, South Carolina. Prepared for Beaunit Lagoon Site Group by Engineering-Science, Inc. August 1993.

Record of Decision, Beaunit Circular Knit and Dyeing Superfund Site, Fountain Inn, Greenville County, South Carolina. United States Environmental Protection Agency Region 4. September 29, 1995.

Final (100%) Remedial Design for Beaunit Corp. Circular Knit & Dyeing Plant, Fountain Inn, Greenville County, South Carolina. Prepared for Beaunit Lagoon Site Group by Engineering-Science, Inc. September 17, 1997.

Operation and Maintenance Plan, Beaunit Corp. Circular Knit & Dyeing Plant, Fountain Inn, Greenville County, South Carolina. Prepared for Beaunit Lagoon Site Group by Parsons Engineering Science, Inc. July 28, 1998.

Remedial Action Report and Construction Inspection Report for Beaunit Corp. Circular Knit & Dyeing Plant NPL Site. Prepared for Beaunit Lagoon Site Group by Parsons Engineering Science, Inc. September 1, 1998.

Preliminary Close Out Report, Beaunit Circular Knit & Dyeing Site, Fountain Inn, Greenville County, South Carolina. United States Environmental Protection Agency Region 4. September 25, 1998.

First Five-Year Review Report for Beaunit Corp. (Circular Knit & Dyeing Plant) Superfund Site, Fountain Inn, Greenville County, South Carolina. Prepared for United States Environmental Protection Agency Region 4 by U.S. Army Corps of Engineers, Savannah District. September 30, 2003.

Second Five-Year Review Report for Beaunit Corp. (Circular Knit & Dyeing Plant) Superfund Site, Fountain Inn, Greenville County, South Carolina. United States Environmental Protection Agency Region 4. September 30, 2008.

Third Five-Year Review Report for Beaunit Corp. (Circular Knit & Dyeing Plant) Superfund Site, Fountain Inn, Greenville County, South Carolina. United States Environmental Protection Agency Region 4. September 25, 2013.

Groundwater Sampling Report, Beaunit Corporation Circular Knit and Dyeing Plant Site, Fountain Inn, South Carolina. Prepared for El Paso Natural Gas Company by Brown and Caldwell. December 9, 2014.

Groundwater Sampling Report, Beaunit Corporation Circular Knit and Dyeing Plant Site, Fountain Inn, South Carolina. Prepared for El Paso Natural Gas Company by Brown and Caldwell. September 30, 2016.

Groundwater Sampling Report, Beaunit Corporation Circular Knit and Dyeing Plant Site, Fountain Inn, South Carolina. Prepared for El Paso Natural Gas Company by Brown and Caldwell. December 29, 2017.

APPENDIX B – CURRENT SITE STATUS

Environmental Indicators
- Current human exposures at the Site are under control.

Are Necessary Institutional Controls in Place?
☒ All ☐ Some ☐ None *Yes*

Has EPA Designated the Site as Sitewide Ready for Anticipated Use?
☒ Yes ☐ No

Has the Site Been Put into Reuse?
☐ Yes ☒ No

APPENDIX C – PRESS NOTICE

The Greenville News
PART OF THE USA TODAY NETWORK

Classified Ad Receipt
(For Info Only - NOT A BILL)

Customer: SITE ASSESSMENT & REMEDIATION

Address: 2600 BULL ST
COLUMBIA SC 29201
USA

Run Times: 1

Run Dates: 04/11/18

Text of Ad:

2841738 Beaunit

PUBLIC NOTICE
Five Year Review of the Beaunit Corp.
(Circular Knit and Dyeing Plant)
Greenville County, South Carolina

The U.S. Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (DHEC) are conducting a Five-Year Review of the former Beaunit Corp. (Circular Knit and Dyeing Plant) site located in Fountain Inn, South Carolina. This is a federal Superfund site with ongoing monitoring activities. The purpose of the review is to evaluate the monitoring results and site conditions and make sure that the cleanup continues to protect human health and the environment. During the review, DHEC staff will conduct interviews with local residents, officials, and others who are familiar with the site. We value input about site conditions and want to hear any concerns of the local community. You are encouraged to participate in the review by contacting us with your comments or questions through May 7, 2018.

The Five-Year Review process is expected to be complete by September 2018, at which time a report will be written on our findings. Any comments received about the site will be summarized in the report. The report will be available on EPA's website and at the Greenville County Library at 400 North Main Street, Fountain Inn, South Carolina. For more information about the Beaunit Corp. (Circular Knit and Dyeing Plant) site, please visit: https://www.epa.gov/superfund/beaunit.

For comments, questions, or to participate in an interview, please contact:

Technical Comments: Randy Bryant, EPA Project Manager, at (404) 562-8794, or by e-mail at Bryant.Randy@epa.gov

Community Involvement: Donna Moye, DHEC Community Liaison, at (803) 898-1382, or by e-mail at moyedd@dhec.sc.gov

Please share this with others you know who might be interested.

APPENDIX D – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST	
I. SITE INFORMATION	
Site Name: Beaunit Corp. (Circular Knit & Dyeing Plant)	**Date of Inspection: 6/26/2018**
Location and Region: Fountain Inn, SC Region 4	**EPA ID: SCD000447268**
Agency, Office or Company Leading the Five-Year Review: EPA Region 4	**Weather/Temperature: 90 degrees Fahrenheit and clear**
Remedy Includes: (Check all that apply) ☒ Landfill cover/containment ☒ Access controls ☒ Institutional controls ☐ Ground water pump and treatment ☐ Surface water collection and treatment ☐ Other: _____	☒ Monitored natural attenuation ☐ Ground water containment ☐ Vertical barrier walls
Attachments: ☐ Inspection team roster attached	☒ Site map attached
II. INTERVIEWS (check all that apply)	
1. **O&M Site Manager** Matt Aufman (Name)	Brown and Cauldwell Hydrogeologist (Title) 6/5/2018 (Date)
Interviewed ☒ at site ☐ at office ☐ by phone Phone: _____ Problems, suggestions ☐ Report attached:	
2. **O&M Staff** _____ (Name)	_____ (Title) mm/dd/yyyy (Date)
Interviewed ☐ at site ☐ at office ☐ by phone : _____ Problems/suggestions ☐ Report attached: _____	

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

Agency SC DHEC
Contact Sara MacDonald (Name) Site Manager (Title) 6/12/2018 (Date) _____ (Phone No.)
Problems/suggestions ☐ Report attached: See Appendix C

Agency _____
Contact _____ Name _____ Title _____ Date _____ Phone No.
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ Name _____ Title _____ Date _____ Phone No.
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ Name _____ Title _____ Date _____ Phone No.
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ Name _____ Title _____ Date _____ Phone No.
Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☐ Report attached: _____

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☒ Readily available	☐ Up to date	☐ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☒ Readily available	☐ Up to date	☐ N/A

Remarks: _____

2. **Site-Specific Health and Safety Plan** ☒ Readily available ☒ Up to date ☐ N/A
☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

3. **O&M and OSHA Training Records** ☒ Readily available ☒ Up to date ☐ N/A

Remarks: _____

4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
7.	**Ground Water Monitoring Records**	☒ Readily available	☒ Up to date	☐ N/A
	Remarks: _____			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			

IV. O&M COSTS

1.	**O&M Organization**		
	☐ State in-house	☐ Contractor for state	
	☐ PRP in-house	☒ Contractor for PRP	
	☐ Federal facility in-house	☐ Contractor for Federal facility	
	☐ _____		

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: __/__/____ Date	To: __/__/____ Date	_____ Total cost	☐ Breakdown attached
From: __/__/____ Date	To: __/__/____ Date	_____ Total cost	☐ Breakdown attached
From: __/__/____ Date	To: __/__/____ Date	_____ Total cost	☐ Breakdown attached
From: __/__/____ Date	To: __/__/____ Date	_____ Total cost	☐ Breakdown attached
From: __/__/____ Date	To: __/__/____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons:

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Perimeter fence is in good repair with locked gates and signage.

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: Contact information on signage is in process of being updated.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): Self-reporting

Frequency: _____

Responsible party/agency: PRP

Contact	Randolph Bryant	EPA RPM	mm/dd/yyyy	_____
	Name	Title	Date	Phone no.

Reporting is up to date	☐ Yes	☐ No	☒ N/A
Reports are verified by the lead agency	☐ Yes	☐ No	☒ N/A
Specific requirements in deed or decision documents have been met	☒ Yes	☐ No	☐ N/A
Violations have been reported	☐ Yes	☐ No	☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: Institutional controls in the form of restrictive covenants prevent direct human exposure to ground water by prohibiting the drilling of ground water wells and restrict land use for the cap parcel and two small land areas immediately downgradient of the cap.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident
   Lengths: _____ Widths: _____ Depths: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Vegetative Cover** ☐ Grass ☒ Cover properly established
   ☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
   Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
   Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
   Arial extent: _____ Height: _____
   Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident
   ☐ Wet areas ☐ Location shown on site map Arial extent: _____
   ☐ Ponding ☐ Location shown on site map Arial extent: _____
   ☐ Seeps ☐ Location shown on site map Arial extent: _____
   ☐ Soft subgrade ☐ Location shown on site map Arial extent: _____
   Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
   ☒ No evidence of slope instability
   Arial extent: _____
   Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
   Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
   Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
   Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type:_____ Arial extent: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions
   ☐ Location shown on site map Arial extent: _____
   Size: _____
   Remarks: _____

6. **Excessive Vegetative Growth** Type: _____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Arial extent: _____
   Remarks: _____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
   Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs maintenance ☐ N/A
   Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1.	**Siltation**	Area extent: _____	Depth: _____	☐ N/A
	☐ Siltation not evident			
	Remarks: _____			
2.	**Erosion**	Area extent: _____	Depth: _____	
	☐ Erosion not evident			
	Remarks: _____			
3.	**Outlet Works**	☐ Functioning		☐ N/A
	Remarks: _____			
4.	**Dam**	☐ Functioning		☐ N/A
	Remarks: _____			
H. Retaining Walls		☐ Applicable	☒ N/A	
1.	**Deformations**	☐ Location shown on site map	☐ Deformation not evident	
	Horizontal displacement: _____		Vertical displacement: _____	
	Rotational displacement: _____			
	Remarks: _____			
2.	**Degradation**	☐ Location shown on site map	☐ Degradation not evident	
	Remarks: _____			
I. Perimeter Ditches/Off-Site Discharge		☐ Applicable	☒ N/A	
1.	**Siltation**	☐ Location shown on site map	☐ Siltation not evident	
	Area extent: _____		Depth: _____	
	Remarks: _____			
2.	**Vegetative Growth**	☐ Location shown on site map	☐ N/A	
	☐ Vegetation does not impede flow			
	Area extent: _____		Type: _____	
	Remarks: _____			
3.	**Erosion**	☐ Location shown on site map	☐ Erosion not evident	
	Area extent: _____		Depth: _____	
	Remarks: _____			
4.	**Discharge Structure**	☐ Functioning	☐ N/A	
	Remarks: _____			

VIII. VERTICAL BARRIER WALLS	☐ Applicable ☒ N/A
1. **Settlement**	☐ Location shown on site map ☐ Settlement not evident
Area extent: _____	Depth: _____
Remarks: _____	
2. **Performance Monitoring**	Type of monitoring: _____
☐ Performance not monitored	
Frequency: _____	☐ Evidence of breaching
Head differential: _____	
Remarks: _____	
IX. GROUND WATER/SURFACE WATER REMEDIES	☒ Applicable ☐ N/A
A. Ground Water Extraction Wells, Pumps and Pipelines	☐ Applicable ☒ N/A
1. **Pumps, Wellhead Plumbing and Electrical**	
☐ Good condition ☐ All required wells properly operating	☐ Needs maintenance ☐ N/A
Remarks: _____	
2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**	
☐ Good condition ☐ Needs maintenance	
Remarks: _____	
3. **Spare Parts and Equipment**	
☐ Readily available ☐ Good condition	☐ Requires upgrade ☐ Needs to be provided
Remarks: _____	
B. Surface Water Collection Structures, Pumps and Pipelines	☐ Applicable ☒ N/A
1. **Collection Structures, Pumps and Electrical**	
☐ Good condition ☐ Needs maintenance	
Remarks: _____	
2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**	
☐ Good condition ☐ Needs maintenance	
Remarks: _____	
3. **Spare Parts and Equipment**	
☐ Readily available ☐ Good condition	☐ Requires upgrade ☐ Needs to be provided
Remarks: _____	

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☐ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of ground water treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1.	**Monitoring Data**
	☒ Is routinely submitted on time ☒ Is of acceptable quality
2.	**Monitoring Data Suggests:**
	☒ Ground water plume is effectively contained ☒ Contaminant concentrations are declining
E. Monitored Natural Attenuation	
1.	**Monitoring Wells** (natural attenuation remedy)
	☒ Properly secured/locked ☒ Functioning ☒ Routinely sampled ☒ Good condition
	☒ All required wells located ☐ Needs maintenance ☐ N/A
	Remarks:

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The site remedy consists of a clay cap over the Site and institutional controls and monitoring to ensure groundwater plume is not migrating and is adequately contained. The cap over the Site prevents the exposure of terrestrial species to COCs in surface soils above appropriate risk levels and helps prevent contaminant leaching into the shallow groundwater below. Currently, there are no complete direct contact human exposure pathways for groundwater at the Site. Water is available to residents and industries through public water systems and there are no groundwater supply wells on the site property. Institutional controls, in the form of restrictive covenants, prevent direct human exposure to ground water by prohibiting the drilling of groundwater wells and restrict land use for the cap parcel and two small sections of land immediately downgradient of the cap. Based on a review of groundwater monitoring data from the previous five years, it appears that the plume is stable and contained within the institutional control boundaries and that, overall, benzene concentrations have decreased to below the MCL of 5 µg/L.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The Site appears to be in good condition and well maintained.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None

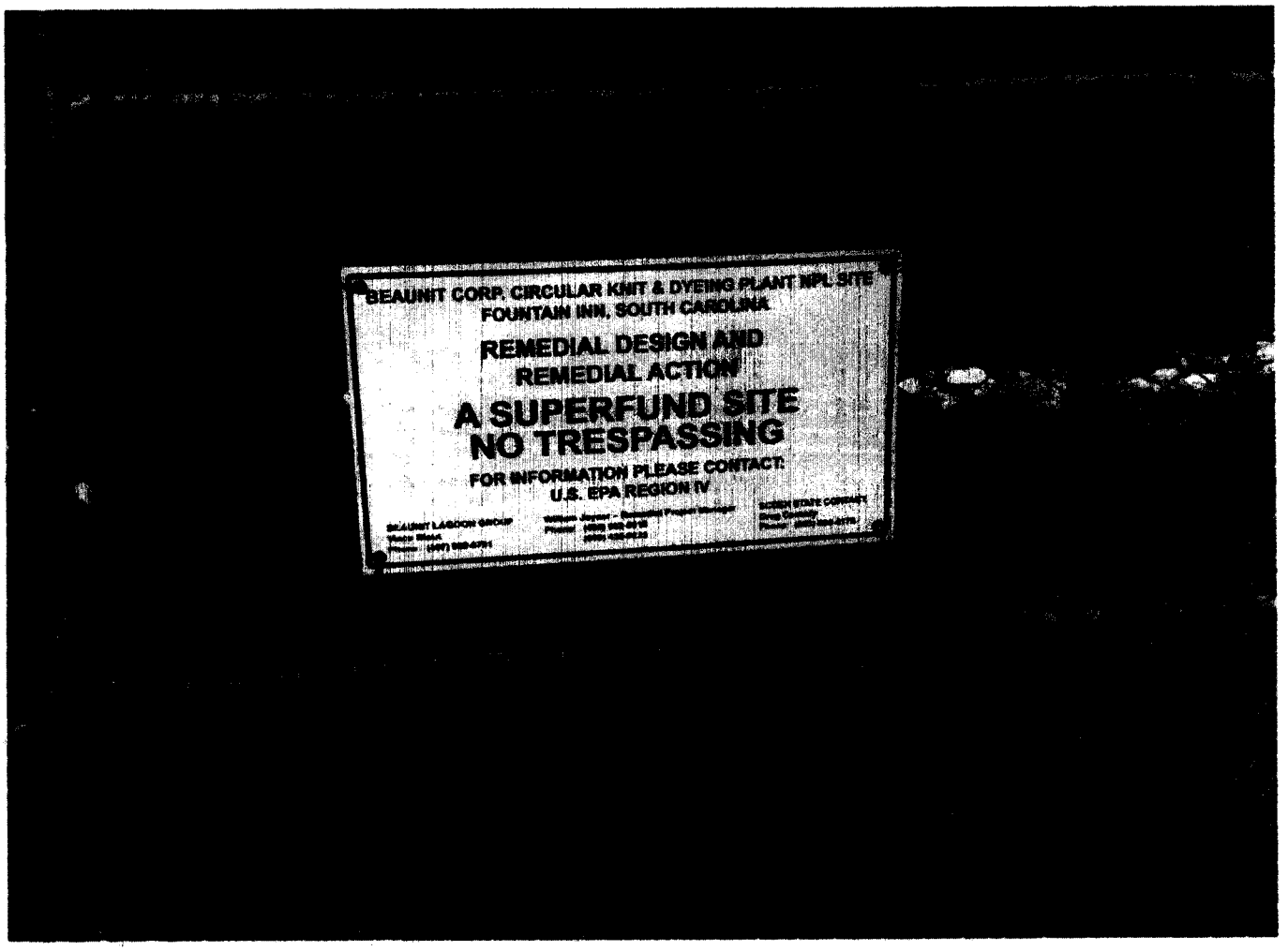
D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None

Site Inspection Participants:

Randolph Bryant, EPA RPM
Joel Padgett, SCDHEC PM
Sara MacDonald, SCDHEC
Timothy Kadar, SCDHEC



Entry gate at the Site facing WSW, capped lagoon behind fence. June 26, 2018.

Perimeter fence around capped lagoon, facing WNW. June 26, 2018.

APPENDIX E – INTERVIEW FORMS

Interview Form for Five-Year Review

Site Name: Beaunit Corporation
Interviewer's Name: Timothy Kadar **Affiliation:** SCDHEC
Interviewee's Name: Sara MacDonald **Affiliation:** SCDHEC, Federal Remediation
Project Manager

Contact Information: SCDHEC
2600 Bull Street
Columbia, SC 29201
macdonsn@dhec.sc.gov

Type of Interview: Email
Date: May 30, 2018

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

The overall impression of the site is positive. The fence around the capped area is overgrown with vegetation, but keeps out trespassers that may damage the cap. There is concern about reuse activities because soil from a hot spot removal action was used to grade the outside of the capped area.

2. What is your assessment of the current performance of the remedy in place at the Site?

The cap and the drainage features surrounding the cap work to mitigate the groundwater contamination. The past sampling event showed that the remaining constituent, benzene, is below remedial goals in all wells. If the cap and drainage features remain intact, the remedy in place appears to work for long-term protection of the environment and human health.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

Gail Jeter from Cardno (803-210-6080) called to talk about what is classified as the superfund property. The Mayor of Fountain Inn calls the Superfund site an "eyesore" and wants to develop it. Ms. Jeter wanted to know the status of the site, what properties have ICs on them, and what investigation work was done. There is also a question regarding if and when the ICs on surrounding properties will be removed once there is no longer groundwater contamination migrating onto the properties.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

A site visit was made after Hurricane Irma to check the integrity of the cap and drainage features. Reviews of the sampling reports have been completed and any comments forwarded to EPA and Brown and Caldwell.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

I am not aware of any changes to state laws that might affect the protectiveness of the Site's remedy,

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

Institutional controls appear to be adequate for the site.

7. Are you aware of any changes in projected land use(s) at the Site?

Gail Jeter from Cardno called to find information about investigations done on properties surrounding the Site. The City of Fountain Inn is interested in development of the land surrounding the Site and is preparing to do Phase 1 investigations.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

The only concern at the moment is the hot spot removal action that was completed. The contaminated soil was removed, but then was used to grade an area outside of the cap. The site may be used as a mixed residential area, therefore, a file review and, if necessary, confirmation sampling of this exposed soil should be completed before delisting to ensure safety for future residents.

Interview Form for Five-Year Review

Site Name: Beaunit Corporation Superfund Site
Interviewer's Name: Timothy Kadar **Affiliation:** SCDHEC
Interviewee's Name: Randolph Bryant **Affiliation:** EPA, SRSEB
Remedial Project Manager

Contact Information: USEPA Region 4
61 Forsyth Street
Atlanta, GA 30303
Bryant.Randy@epa.gov

Type of Interview: Email
Date: May 30, 2018

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? The cleanup was completed in 1998. Periodic maintenance and monitoring is ongoing and has been conducted appropriately. I am not aware of any planned reuse activities. Any future reuse would have to be protective of the installed cap.

2. What is your assessment of the current performance of the remedy in place at the Site? The remedy is performing as intended and is protective of human health and the environment.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years? No.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities. EPA's activities during this period have been related to reviews of the annual groundwater monitoring reports. EPA also visited the Site in September 2017 and confirmed the lack of storm damage from Hurricane/Tropical Storm Irma.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy? No.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? Yes. The institutional controls have been in place since 1998 and 2010, respectively, for parcels associated with the Site.

7. Are you aware of any changes in projected land use(s) at the Site? No.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? Groundwater quality has been improving since completion of the soil remedy. Benzene, the remaining contaminant of concern in groundwater, has been below the cleanup goal in all but one monitoring well since 2015. Furthermore, benzene in groundwater was below the cleanup goal in all monitoring wells during the most recent sampling which occurred in 2017.

APPENDIX F – DETAILED ARARs REVIEW

Appendix E includes a review of relevant, site-related documents including the RODs, AROD, ESDs, remedial action reports and recent monitoring data.

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain "a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment." The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate. In performing the FYR for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

- Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, remedial action, location or other circumstance found at a CERCLA site.

- Relevant and appropriate requirements are those standards that, while not "applicable," address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are more stringent than federal requirements may be applicable or relevant and appropriate.

- To-Be-Considered (TBC) criteria are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary remedial action. For example, TBCs may be particularly useful in determining health-based levels where no ARARs exist or in developing the appropriate method for conducting a remedial action.

Chemical-specific ARARs are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish an acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Examples of chemical specific ARARs include maximum contaminant levels (MCLs) under the federal Safe Drinking Water Act and ambient water quality criteria enumerated under the federal Clean Water Act.

Action-specific ARARs are technology- or activity-based requirements or limits on actions taken with respect to a particular hazardous substance. These requirements are triggered by a remedial activity, such as discharge of contaminated groundwater or in-situ remediation.

Location-specific ARARs are restrictions on hazardous substances or the conduct of the response activities solely based on their location in a special geographic area. Examples include restrictions on activities in wetlands, sensitive habitats and historic places.

Remedial actions are required to comply with the chemical-specific ARARs identified in the ROD. In performing the five-year review for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

Groundwater ARARs

According to the 1995 ROD, The Remedial Action Objective (RAO) for groundwater remediation at the Site is to prevent human exposure, via any exposure route [ingestion and non-ingestion (i.e., showering)] to groundwater containing contaminants in concentrations that exceed ARARs and appropriate risk levels.

Table F-1 - ARAR Review for Groundwater

Contaminant of Concern[a]	1995 RI ARAR (µg/L)	Current 2018 ARAR (µg/L)[b]	ARAR Change
Benzene	5[b]	5	No Change
2-Methylnaphthalene	NA[c]	NA	NA
Naphthalene	NA[c]	NA	NA
Beryllium	4[b]	4	No Change
Chromium (VI)	100[d]	100[d]	No Change
Manganese	200[e]	NA[f]	NA

Notes:
a – COCs from 1995 ROD.
b – Based on federal MCL.
c – ARAR not identified in ROD. Cleanup goal based on risk.
d – MCL for total chromium.
e – Based on MCL goal.
f – Manganese has no MCL, and therefore has no current ARAR.

Soil ARARs

The Site's 1993 Remedial Investigation Report stated that no chemical-specific ARARs existed for constituents detected in soil. Action-specific soil ARARs specified in the 1995 ROD were relevant during the remedy's construction, but are not relevant to the remedy's continued protectiveness. The EPA calculated cleanup goals for soil COCs based on protection of ecological receptors.

APPENDIX G – TOXICITY REVIEW

Table G-1: Toxicity Review Table

Contaminant	Carcinogenic toxicity changes			Non-carcinogenic toxicity changes		
	Oral Cancer Slope Factor			Oral Reference Dose (RfD)		
	1993 RI/FS Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	2018 Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Change in Oral Cancer Slope Factor	1993 RI/FS Oral RfD Value (mg/kg-d)	2018 Oral RfD Value (mg/kg-d)	Change in Oral RfD
2-Methylnaphthalene[c]	c	N/A	N/A	c	4.0E-03	New
Arsenic	1.8E+00	1.5E+00	Lower	3.0E-04	3.0E-04	None
Benzene[c]	c	5.5E-02	New	c	4.0E-03	New
Beryllium	8.4E+00	N/A	N/A	5.0E-03	2.0E-03	Lower
Chromium (VI)[d]	c	5.0E-01[e]	New	c	3.0E-03	New
Nickel[a,c]	c	N/A	N/A	c	2.0E-02	New
Manganese[b]	N/A	N/A	N/A	1.10E-04	2.4E-02	Higher
Naphthalene[c]	c	N/A	N/A	c	2.0E-02	New

Notes

N/A = toxicity value not available for this substance.

a – Contaminant information based on nickel soluble salts RSL values.

b – Contaminant information based on non-diet RSL values.

c – COC identified in the Baseline Risk Assessment in the 1995 ROD; however, COC-related toxicity information not mentioned in 1993 RI/FS.

d – The ROD lists Chromium (VI) as a COC; however, the 1993 RI/FS only lists toxicity information for total chromium.

e – Based on toxicological information reviewed by the New Jersey Department of Environmental Protection, which classifies hexavalent chromium as a carcinogen through oral exposure. The EPA is currently undergoing a review of the draft toxicological assessment for hexavalent chromium.

APPENDIX H – INSTITUTIONAL CONTROL DOCUMENTS

BOOK 1786 PAGE 879

STATE OF SOUTH CAROLINA)
)
COUNTY OF GREENVILLE)

RESTRICTIVE COVENANTS AND CONDITIONS - 1.377 ACRE SITE
PLAT BOOK 11-X, PAGE 9
DEED BOOK 1248, PAGE 837

FILED
GREENVILLE, SC
SEP -9 A 11:23
JUDY G. HIX
REGISTER OF DEEDS

WHEREAS, Wilson Sporting Goods Co., a Delaware corporation, is the owner and holder of record title to that certain piece, parcel or lot of land containing approximately 1.377 acres, situate, lying and being in the County of Greenville, State of South Carolina, as described in **Exhibit A**, attached hereto and incorporated herein by reference as if fully set forth; and

WHEREAS, a release of hazardous substances, as defined by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. § 9601 et. Seq., has occurred on the property described herein (hereinafter referred to as the "Property"); and

WHEREAS, the undersigned owner now wishes to acknowledge and place upon said Property certain restrictions and conditions relative to the future use or development of said Property.

NOW, THEREFORE, in consideration of the Premises, the undersigned owner, for itself, its successors and assigns, does hereby subject the Property described in Exhibit A to the following restrictions and conditions ("Restrictions") relative to the use and development thereof, which Restrictions shall run with the Property and shall be binding upon all owners or occupants thereof:

1. Use of the Property in any manner: (a) which would impair Wilson Sporting Goods Co., El Paso Natural Gas Company, Collins & Aikman Products Co., PepsiCo Inc., or Continental Assurance Co. (hereinafter referred to as "Beaunit Lagoon Site PRP's"), and their authorized representatives' entry to the Property; (b) which would impair the right of access granted to the United States Environmental Protection Agency (hereinafter referred to as "EPA"), the State of South Carolina and their authorized representatives; (c) which would interfere with the performance of the work required by the consent decree in *United States of America v. Collins & Aikman*

REC FEE 10.00
10:06AM

75785

Products Co. et al., Civil Action No. 6-96-2659-21, United States District Court for the District of South Carolina (hereinafter referred to as the "Consent Decree"), including operation and maintenance and oversight; or (d) any activity which would disturb the integrity and effectiveness of the cap; or (e) seeking the issuance or the issuance of any well installation permits that may impact the Site during the duration of the remedial design/remedial actions, including operation and maintenance, on the Property, without prior consultation by the State with EPA is prohibited, unless the EPA Regional Administrator determines that the disturbance is (i) necessary to the proposed use of the Property, and will not increase the potential hazard to human health or the environment, or (ii) is necessary to reduce a threat to human health or the environment.

2. During the performance of the work required by the above referenced Consent Decree, no potable water supply wells shall be installed at the Property within contaminated groundwater or in areas which could draw from contaminated groundwater, except as authorized by EPA.

3. Any subsequent transferees (a) shall permit the United States, EPA, the State of South Carolina, Beaunit Lagoon Site PRP's, and their respective contractors and other authorized representatives, to enter the Property to perform any work under the Consent Decree, including oversight, and for any other purpose set forth in Section IX of the Consent Decree and to perform operation and maintenance; (b) shall agree not to interfere with or disturb the performance of any work pursuant to the Consent Decree, including oversight; and (c) shall agree to inform any person that subsequently acquires any title, ownership, leasehold, easement, or other interest in the Property, or any portion thereof, or any appurtenances thereto, of the requirements, conditions, and operative effect of the Consent Decree.

4. The Property is the subject of the Consent Decree referenced above which was recorded in the RMC Office of Greenville County, South Carolina, on May 14, 1997 in Deed Book 1689 at Page 666, et seq. The restrictions and obligations set forth in Section IX, Paragraphs 24, 25, 26 and 27 shall run with the land and shall be binding upon any and all persons, as defined in the Consent Decree, and their successors and assigns who now or may hereafter acquire any title, ownership, leasehold, easement, or other interest in the Property, or any portion thereof, or any appurtenance thereto, in accordance with applicable South Carolina law.

IN WITNESS WHEREOF, the undersigned Corporation, by its duly authorized officers, has hereunto set its hand and seal this 31st day of August, 1998.

SIGNED, sealed and delivered in the presence of the following witnesses:

[illegible]

[illegible]

[illegible]
EXECUTIVE RECEPTIONIST

WILSON SPORTING GOODS CO., a Delaware corporation (SEAL)

By: [illegible]
Print Name: RAYMOND M. BEENS
Its: GENERAL COUNSEL & ASST. SECRETARY

STATE OF ILLINOIS)
)
COUNTY OF COOK)

ACKNOWLEDGMENT

Before me personally appeared RAYMOND M BEENS, to me well known, who, being by me duly sworn, did depose and say that (s)he is the GENERAL COUNSEL of Wilson Sporting Goods Co., a Delaware corporation, and, as such, executed the foregoing instrument, and that the seal affixed to the foregoing instrument is the Corporate seal of said corporation and that it was affixed to said instrument by due and regular Corporate authority, and that said instrument is the free act and deed of said corporation.

"OFFICIAL SEAL"
Kathleen A. Gable
Notary Public, State of Illinois
My Commission Exp. 09/10/2001

[HERE AFFIX THE SEAL OF THE NOTARY PUBLIC]

Kathleen A. Gable
Notary Public for State of Illinois (SEAL)
My Commission Expires: 9/10/2001

EXHIBIT A

DESCRIPTION OF PROPERTY

ALL that certain piece, parcel or tract of land, with any and all improvements thereon, situate, lying and being northwest of Georgia Road, near the Town of Fountain Inn in Greenville County, South Carolina, and having, according to a plat entitled "Wilson Sporting Goods and Pepsico Property", prepared by James D. Crain, R.L.S., dated July 26, 1985 and recorded in Plat Book 11-X at Page 9 in the RMC Office for Greenville County, the following metes and bounds, to-wit:

BEGINNING at an iron pin located at the southwest corner of the subject property, which pin is located within the right-of-way of Duke Power Company, and running thence N 58-36 E 200 feet to an iron pin; thence N 31-24 W 300 feet to an iron pin; thence S 58-36 W 200 feet to an iron pin; thence S 31-24 E 300 feet to an iron pin, the point of BEGINNING.

FILED FOR RECORD IN GREENVILLE
COUNTY SC R.O.D. OFFICE AT 11:23 AM
09/09/98 RECORDED IN DEED
BOOK 1786 PAGE 0879
DOC # 98075785

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8 PGS
Book:DE 2374 Page:5616-5623
July 08, 2010 02:06:05 PM
Rec:$14.00 Cnty Tax:$0.00 State Tax:$0.00
FILED IN GREENVILLE COUNTY,SC

STATE OF SOUTH CAROLINA)
) **DECLARATION OF COVENANTS AND RESTRICTIONS**
COUNTY OF GREENVILLE)

THIS DECLARATION OF COVENANTS AND RESTRICTIONS ("Declaration) is made and entered into this 14th day of June 2010, by Cross Country Development LLC ("CCD") and the South Carolina Department of Health and Environmental Control ("Department").

RECITALS

WHEREAS, this Declaration is entered into pursuant to S.C. Code §44-56-200 et seq.; and

WHEREAS, CCD is the owner of certain parcels or lots of land described as Tracts B and C-2, containing 0.136 and 1.823 acres respectively, in the County of Greenville, South Carolina, as more particularly described in Exhibit A attached hereto and incorporated herein by reference as if fully set forth (property referred to hereafter as the "CCD Property"); and

WHEREAS, a release of hazardous substances, as defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 USC § 9601 et seq. ("CERCLA") has occurred on an adjacent property, which release is the subject of a Consent Decree in *United States of America v. Collins & Aikman Products Co. et al.*, Civil Action No. 6-96-2659-21, United States District Court for the District of South Carolina, that was recorded in the Office of the Recorder of Deeds for Greenville County South Carolina, on May 14, 1997 in Deed Book 1689 at Page 666, et seq.("Consent Decree"); and

WHEREAS, groundwater under the CCD Property contains benzene, a hazardous substance as defined by CERCLA; and

WHEREAS, the Beaumit Lagoon Site Group ("BLSG") representing the respondents to the above referenced Consent Decree (i.e. Collins & Aikman Products Co., Wilson Sporting Goods Company, and El Paso Natural Gas Company), at the direction of the United States Environmental Protection Agency ("EPA") and for the purpose of protecting public health and the environment, have requested CCD to place certain restrictions and conditions relative to the future use and development of the CCD Property; and

WHEREAS, CCD has agreed to impose certain restrictions on the manner in which the CCD Property may be developed and used in the future; and

WHEREAS, it is the intention of all parties that EPA is a third party beneficiary of said restrictions and said restrictions shall be enforceable by the EPA, Department, and their successor agencies; and

WHEREAS, EPA has worked closely with the Department in developing the Consent Decree, and EPA will assist the Department in monitoring and enforcing this Declaration; and

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS that CCD hereby declares and covenants on behalf of itself, its heirs, successors, and assigns that the CCD Property described in Exhibit A shall be held, mortgaged, transferred, sold, conveyed, leased, occupied, and used subject to the following restrictions, which shall touch and concern and run with the title to the CCD Property.

1. CCD covenants for itself, its heirs, successors and assigns that the CCD Property shall not be used for the following purposes without prior written approval from EPA and the Department or their successor agencies: residential, agricultural, child day care facilities, schools, or elderly care facilities.

2. CCD covenants for itself, its heirs, successors and assigns that groundwater beneath the CCD Property shall not be used for consumptive use or other purposes without prior written approval from EPA and the Department or their successor agencies

3. CCD covenants for itself, its heirs, successors and assigns that there shall be no drilling of groundwater wells on the CCD Property without prior written approval from EPA and the Department or their successor agencies.

4. CCD covenants for itself, its heirs, and successors and assigns that the CCD Property shall not be used for mining, extraction of coal, oil, gas or any other minerals or non-mineral substances.

5. CCD covenants for itself, its heirs, successors and assigns that the EPA, the Department, their successor agencies, and all other parties performing response actions under EPA's or the Department's oversight shall be provided reasonable access for: (i) inspecting the CCD Property, (ii) monitoring, (iii) verifying information, (iv) sampling the CCD Property, (v) assessing the need for additional response or quality control practices, (vi) implementing the work required under the Consent Decree (vii) assessing the responsible party's compliance, (viii) assessing compliance with existing land use restrictions under the Consent Decree and this Declaration, or (ix) taking such samples as may be necessary to enforce this Declaration.

6. The covenants and restrictions set forth herein shall run with the title to the CCD Property and shall be binding upon CCD, its heirs, successors and assigns. It is expressly agreed that the Department and EPA shall have the right to enforce these covenants and restrictions upon, CCD and its heirs, successors and assigns. CCD and its heirs, successors, and assigns shall include the following notice on all deeds, mortgages, plats, or any legal instruments used to convey any interest in the CCD Property (failure to comply with this paragraph does not impair the validity or enforceability of these covenants):

NOTICE: This Property Subject to Declaration of Covenants and Restrictions and any subsequent Amendments Recorded at _____

7. This Declaration shall remain in place until such time as the Department has made a written determination that the covenants and restrictions set forth herein are no longer necessary. The Department shall not consent to any such termination unless the requirements of the Consent Decree have been met. This Declaration shall not be amended without the written consent of the Department or its successor agency. The Department shall not consent to any such amendment or termination without the consent of EPA.

11. It is expressly agreed that EPA is not the recipient of a real property interest but is a third party beneficiary of the Declaration of Covenants and Restrictions and, as such, has the rights of enforcement.

12. This Declaration only applies to the CCD Property expressly identified in Exhibit A and does not impair the Department's and EPA's authority with respect to the CCD Property or other real property under the control of CCD.

IN WITNESS WHEREOF, CCD has caused this instrument to be executed as of the date first above written.

WITNESSES:

_____

_____

_____

_____

CROSS COUNTRY DEVELOPMENT, LLC

By: _____
Ray M. Berens
Managing Member

By: _____
Marcus R. Ferries
Secretary/Treasurer

STATE OF ILLINOIS)

COUNTY OF COOK) ACKNOWLEDGEMENT

I, Mary Parrott Downing (Notary Public), do hereby certify that Ray M. Berens, an authorized representative of CCD, personally appeared before me this day and acknowledged the due execution of the foregoing instrument, on behalf of CCD.

Witness my hand and official seal this 22nd day of April, 2010.

Mary Parrott Downing

Notary Public for Ray Berens

My Commission Expires: 2/27/11

OFFICIAL SEAL
MARY PARROTT DOWNING
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES:02/27/11

STATE OF Texas)
COUNTY OF Harris) ACKNOWLEDGEMENT

I, Monica Hayes (Notary Public), do hereby certify that Marcus R. Ferries, an authorized representative of CCD, personally appeared before me this day and acknowledged the due execution of the foregoing instrument, on behalf of CCD.

Witness my hand and official seal this 3rd day of June, 2010.

MONICA HAYES
MY COMMISSION EXPIRES
APRIL 12, 2012

Monica Hayes
Notary Public for State of Texas
My Commission Expires: April 12, 2012

IN WITNESS WHEREOF, the Department has caused this instrument to be executed as of the date first above written.

WITNESSES

South Carolina Department of Health and Environmental Control

By: _____

Daphne G. Neel, Chief

Bureau of Land and Waste Management

South Carolina Department of Health and Environmental Control

STATE OF SOUTH CAROLINA)

) ACKNOWLEDGEMENT

COUNTY OF RICHLAND)

I, Barry B. Nelson (Notary Public), do hereby certify that Daphne G. Neel, Chief, Bureau of Land and Waste Management, personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

Witness my hand and official seal this 14 day of June, 2010.

Notary Public for South Carolina

My Commission Expires: January 26, 2010

EXHIBIT A
DESCRIPTION OF PROPERTY SUBJECT TO THE FOREGOING RESTRICTIVE COVENANTS AND CONDITIONS

PROPERTY DESCRIPTION
TRACT "B"

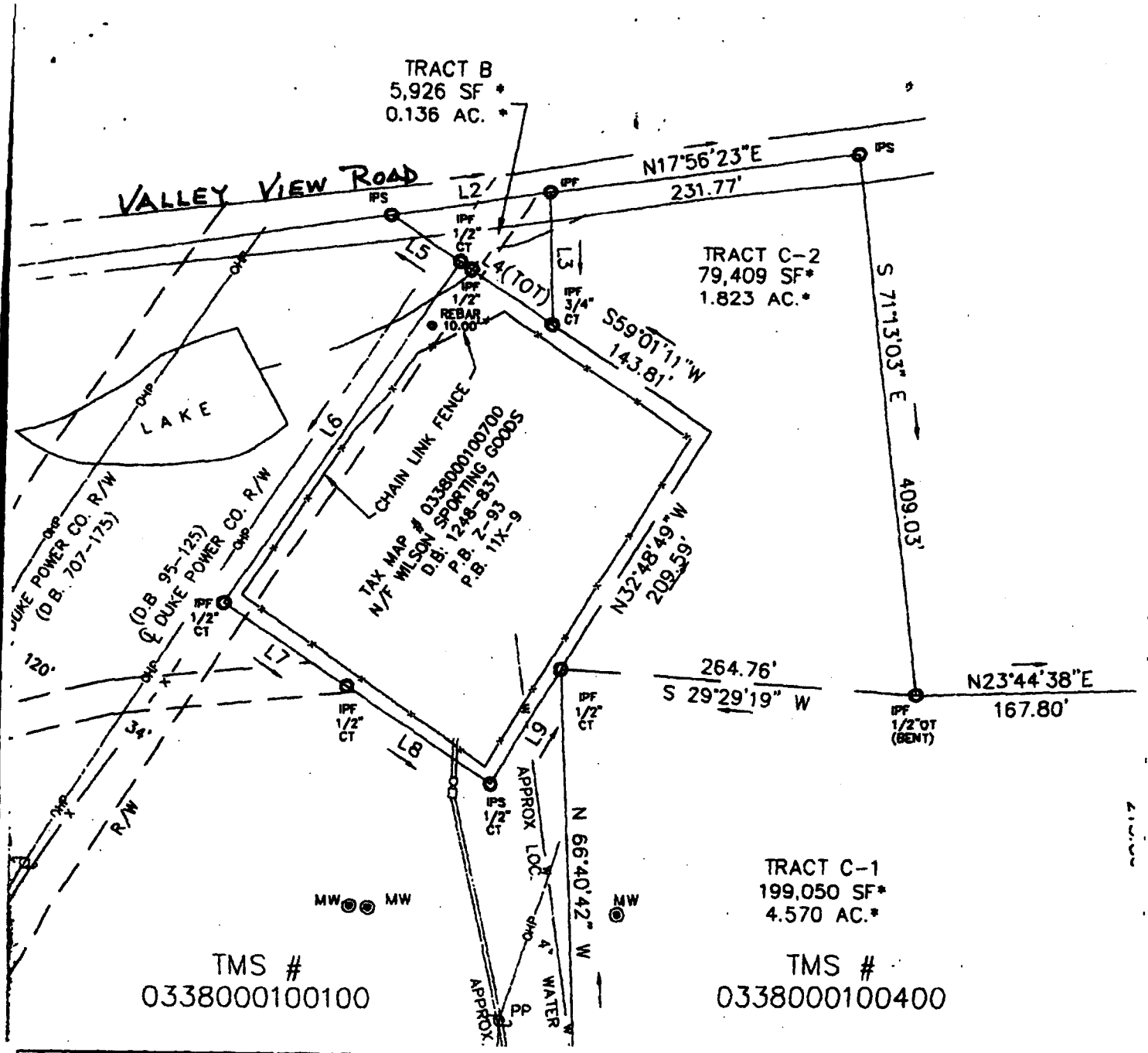
ALL that certain piece, parcel or tract of land lying and being situate near the City of Fountain Inn, County of Greenville, State of South Carolina and being described more particularly below to wit:

COMMENCING at a nail (set) located at the intersection of the centerline of Valley View Road and the centerline of S.C.L. Railroad, thence with said centerline (more or less) of Valley View Road N 16 35 42 E for 1490.32 feet to a ½" rebar (set) being the true POINT OF BEGINNING, thence continuing along said centerline N 16 35 42 E for 119.81 feet to an iron pin (found), thence leaving said centerline S 66 36 54 E for 99.62 feet to a ¾" crimp top iron pin (found), thence S 59 04 28 W for 83.97 feet (passing through a reference ½" rebar (found) at 73.97 feet) to a ½" crimp top iron pin (found), thence S 59 04 28 W for 62.51 feet to a ½" rebar (set) being the point of beginning. Said tract contains 0.136 acres.

PROPERTY DESCRIPTION
TRACT "C-2"

ALL that certain piece, parcel or tract of land lying and being situate near the City of Fountain Inn, County of Greenville, State of South Carolina and being described more particularly below to wit:

COMMENCING at a nail (set) located at the intersection of the centerline of Valley View Road and the centerline of S.C.L. Railroad, thence with said centerline (more or less) of Valley View Road N 16 35 42 E for 1490.32 feet to a ½" rebar (set), thence N 16 35 42 E for 119.81 feet to an iron pin (found) being the true POINT OF BEGINNING, thence N 17 56 23 E for 231.77 feet to a ½" rebar (set), thence S 71 13 03 E for 409.03 feet to a bent ½" open top iron pin (found), thence S 29 29 19 W for 264.76 feet to a ½" crimp top iron pin (found), thence N 32 48 49 W for 209.59 feet to a point, thence S 59 01 11 W for 143.81 feet to a ¾" crimp top iron pin (found), thence N 66 36 54 W for 99.62 feet to an iron pin (found) being the point of beginning. Said tract contains 1.823 acres.



LINE TABLE		
LINE	LENGTH	BEARING
L1	105.63	S71°02'30"E
L2	119.81	N16°35'42"E
L3	99.62	S66°36'54"E
L4(TOT)	83.97	S59°04'28"W
L5	62.51	S59°04'28"W
L6	309.69	S30°52'33"E
L7	109.44	N59°10'50"E
L8	128.81	N58°54'11"E
L9	100.22	N32°48'49"W
L10	46.47	S66°40'42"E
L11	19.88	N72°44'52"E

EXCERPTS FROM "SURVEY FOR CROSS COUNTRY DEVELOPMENT, LLC", DATED SEPTEMBER 10, 2010, PREPARED BY C.O. RIDDLE SURVEYING CO., INC.

FILED FOR RECORD IN GREENVILLE COUNTY, SC ROD
2010045954 Book: DE 2374 Page: 5616-5623
July 08, 2010 02:06:05 PM

Timothy L. Kenney

EXHIBIT (A)

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11097635

Green, Michelle

From: Bryant, Randolph
Sent: Thursday, February 1, 2018 10:44 AM
To: R4_SEMS_Records
Subject: Please add email and attachment to Beaunit Circular Superfund Site in Fountain Inn SC SCD000447268
Attachments: Fountain Inn 2017 Sampling Report COMPILED.PDF

From: Reinhard Ruhmke [mailto:RRuhmke@BrwnCald.com]
Sent: Friday, December 29, 2017 5:46 PM
To: Bryant, Randolph <Bryant.Randy@epa.gov>; Greg Cassidy (cassidga@dhec.sc.gov) <cassidga@dhec.sc.gov>
Cc: David Zuvanich <David_Zuvanich@kindermorgan.com>
Subject: Groundwater sampling report for Beaunit Circular Superfund Site in Fountain Inn SC

Hello, attached is the 18-month sampling report for the Beaunit Circular Superfund Site in Fountain Inn SC. Please do not hesitate to contact me if you have any questions. Thanks Reinhard

Reinhard Ruhmke, PG
Managing Geologist
Professional Registration in Specific States
Brown and Caldwell | Raleigh, NC
RRuhmke@brwncald.com
T 919.424.1435 | C 919.609.9664

Brown AND Caldwell

https://dropbox.hightail.com/ReinhardRuhmkeDropbox

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Groundwater Sampling Report

Beaunit Corporation Circular Knit and
Dyeing Plant Site
Fountain Inn, South Carolina

Prepared for
Kinder Morgan, Houston, Texas

December 29, 2017

Groundwater Sampling Report

Beaunit Corporation Circular Knit and Dyeing Plant Site
Fountain Inn, South Carolina

Prepared for
Kinder Morgan, Houston, Texas

December 29, 2017

REGISTERED GEOLOGIST
REINHARD M. RUHMKE
No. 2469
STATE OF SOUTH CAROLINA

Reinhard Ruhmke, PG

Brown AND Caldwell
5430 Wade Park Blvd, Suite 200
Raleigh, North Carolina 27607

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List of Abbreviations

amsl	above mean sea level
AOC	Administrative Order by Consent
DO	dissolved oxygen
DUPLICATE	field duplicate sample
EPNG	El Paso Natural Gas Company
mg/L	milligrams per Liter
MNA	monitored natural attenuation
MS/MSD	matrix spike/matrix spike duplicate
ORP	oxygen reduction potential
Pace	Pace Analytical Services, Inc.
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SCDHEC	South Carolina Department of Health and Environmental Control
Site	Circular Knit and Dyeing Plant Site
SM	State Method
TOC	total organic carbon
µg/L	micrograms per Liter
USEPA	United States Environmental Protection Agency

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Fountain Inn 2017 Sampling Report

Section 1

Introduction

An Administrative Order by Consent (AOC) has been executed between the United States Environmental Protection Agency (USEPA) and the Beaunit Lagoon Site Group (El Paso Natural Gas Company [EPNG], Continental Insurance Company, Kayser-Roth Corporation, PepsiCo, Inc., and Wilson's Sporting Goods Co.) for the Beaunit Corp. Circular Knit and Dyeing Plant Site (Site) located in Fountain Inn, South Carolina (Figure 1). The Site occupies approximately 1.3 acres on the northwest side of Fountain Inn, South Carolina, in Greenville County. The Site is a former wastewater lagoon that previously served a former knitting, dyeing, and finishing plant. The former plant lies approximately 400 yards east of the Site. The wastewater lagoon was built in 1951 and ceased operations in 1977 when the plant connected to municipal sewer service. In 1980, the wastewater treatment structures around the lagoon were demolished and the lagoon was partially filled. The Site is currently vacant and surrounded by a fence (see Figure 2). The area directly adjacent to the Site is undeveloped. Single-family detached homes, multi-family apartment complexes, and trailer parks are in the general vicinity of the Site. The nearest residence is a multi-family apartment complex located approximately 100 yards northeast of the Site across Valleyview Road.

The USEPA issued a Record of Decision (ROD) for the Site on September 29, 1995. A consent decree was negotiated between the USEPA and the Beaunit Lagoon Site Group in February 1996. Following approval of the 1995 ROD, a geosynthetic clay liner with a soil and clay cover was placed as a protective cap over the closed lagoon. The cap was completed in 1998. Semi-annual sampling was conducted between July 1998 and July 2000. Annual sampling was conducted from 2001 to 2003. The first 5-year review, conducted in September 2003, recommended continued annual groundwater monitoring. Continued monitoring, which included an annual sampling event and reporting to the USEPA and the South Carolina Department of Health and Environmental Control (SCDHEC), ensued until 2007. The second 5-year review occurred in September 2008 with recommendation of continued groundwater monitoring on an 18-month schedule. The USEPA, SCDHEC, and the Beaunit Lagoon Site Group agreed to reduce the analyte list to only benzene and to reduce the number of sampling locations to those identified on Figure 2. The third 5-year review occurred in September 2013 with recommendations to maintain the groundwater monitoring program, update the analytical method for benzene, and submit an updated Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP)[1]. The SAP/QAPP was approved by the USEPA on September 15, 2014. In the First Quarter of 2015, a quarterly sampling program of three wells was initiated for one year to determine if there are seasonal fluctuations in benzene concentrations and evaluate whether monitored natural attenuation (MNA) is a viable groundwater remedial alternative for the residual benzene in groundwater. The quarterly sampling program was approved by the USEPA in email correspondence dated January 7, 2015. The results of the quarterly sampling program were provided to the USEPA and SCDHEC in the 18-month sampling report dated September 30, 2016.

[1] Sampling and Analysis Plan, September 15, 2014, Brown and Caldwell

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Fountain Inn 2017 Sampling Report

This report presents the results of the 18-month sampling event conducted in September 2017. This groundwater sampling report is organized as follows:

- Section 1 – Introduction
- Section 2 – Groundwater Sampling Methodology
- Section 3 – Results of Groundwater Sampling
- Section 4 – Summary
- Section 5 – Limitations

The laboratory analytical reports are provided in Appendix A. Trend plots of the constituent of concern from the sampling data are provided in Appendix B. The operations and maintenance checklists for the wells and cap are provided in Appendix C, the field data sheets are provided in Appendix D, and the data validation reports are provided in Appendix E.

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Fountain Inn 2017 Sampling Report

Section 2

Groundwater Sampling Methods

The 18-month sampling event occurred on September 26 and 27, 2017.

2.1 Groundwater Sampling

2.1.1 Sampling Methodology

Four permanent monitoring wells and three temporary monitoring wells are present at the Site and are depicted on Figure 2. Depth to groundwater measurements were recorded for each monitoring well with an electronic water level meter. After the water level measurements were collected, the wells selected for sampling were purged and sampled following the sampling procedures in the SAP[1]. A peristaltic pump with new disposable tubing was used for each well during each sampling event. During the low-flow purging, pH, specific conductance, temperature, dissolved oxygen (DO), oxygen reduction potential (ORP), and turbidity were measured using a flow-through cell. Field measurements and observations were recorded on Field Sample Data Sheets (Appendix D). After stabilization, groundwater samples were collected in laboratory-supplied sample containers containing preservative, as appropriate.

Non-dedicated and reusable equipment used for purging and sampling was decontaminated between each well sampled. Field decontamination procedures included washing the measuring instruments between wells with a detergent solution wash and distilled water rinse. New tubing and string were utilized for each well. When possible, wells were sampled in order of lowest to highest concentration of groundwater contamination based on data from the previous sampling event. Instruments and equipment used to gather or measure environmental data were calibrated, consistent with the manufacturer's specifications, to increase the accuracy and reproducibility of the results.

Analyses of the samples in the field or by the laboratory were conducted according to methods and procedures consistent with the SAP[1]. Samples from each monitoring well, including the duplicate sample, were analyzed for benzene by USEPA Method 8260B. Appropriate quality assurance/quality control (QA/QC) samples were also collected. The groundwater and QA/QC samples were preserved, packaged, and transported under chain-of-custody protocol to Pace Analytical Services, Inc. (Pace) in Huntersville, North Carolina, a State of South Carolina certified analytical testing laboratory. Samples collected for MNA parameters were analyzed for sulfate by USEPA Method 300.0, nitrate by USEPA Method 353.2, chloride by State Method (SM) 4500-CL-E, total organic carbon (TOC) by SM 5310, total alkalinity by SM 2320B, and total manganese and iron by USEPA Method 3010/6010.

2.1.2 18-Month Sampling Event

Four permanent monitoring wells and three temporary monitoring wells were monitored during this event following the procedures provided in Section 2.1.1. The sample locations are shown on Figure 2. Samples were analyzed for benzene for all wells and MNA parameters for wells MW-4S, MW-5S, MW-6S, TW-8, and TW-11.

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Foundation 2017 Sampling Report

QA/QC samples were collected and analyzed according to the SAP[1]. One matrix spike/matrix spike duplicate (MS/MSD) was collected from both the suite of permanent monitoring wells and the suite of temporary monitoring wells (Table 2-1). One field duplicate sample (DUPLICATE) was collected from well MW-5S. One trip blank was provided by Pace and analyzed for benzene. Table 2-1 provides a summary of samples that were collected during this sampling event.

Table 2-1. Summary of Groundwater Sample Analyses - September 2017

Groundwater Zone	Monitoring Well	Analysis for 2016 Sampling Event
Permanent Monitoring Wells		
Shallow	MW-4S	MNA and benzene samples collected
	MW-5S	Field duplicate (DUPLICATE) sample collected from this well. MNA and benzene samples collected
	MW-6S	MNA and benzene samples collected
Deep	MW-5D	Sample for benzene collected.
Temporary Monitoring Wells		
Shallow	TW-8	MNA and benzene samples collected
	TW-9	MS/MSD sample collected from this well. Sample for benzene collected
	TW-11	MNA and benzene samples collected

The results of the inspection of the Site fencing, wells, and remedial cap are provided in Appendix C. Some degradation of the Site fencing, three well pads (MW-4S, TW-9, and TW-11), and cover soil erosion along the perimeter of the remedial cap were observed. Tree falls were also noted that have damaged the fence. Repairs to the fence and well pads will be conducted during the 1st quarter of 2018. Although the integrity of the remedial cap is not compromised, continued monitoring of the minor erosion around the remedial cap perimeter should occur. The operations and maintenance checklists are provided in Appendix C.

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Fountain Inn 2-2017 Sampling Report

Section 3

Results of Groundwater Sampling

A summary of current and historical analytical groundwater results for benzene are presented on Figure 3. A summary of groundwater analytical results for the September 2017 sampling event is provided in Table 3-1.

Benzene was detected below the Site remediation goal of 5 micrograms per Liter (µg/L) in all wells during the September 2017 18-month sampling event. The concentration of benzene in off-site well MW-5S decreased from 7.3 µg/L in March 2016 to below the laboratory reporting limit (< 1.0 µg/L) in September 2017. Overall, the benzene plume appears to be shrinking with benzene concentrations showing an overall decreasing trend from their historic highs over the past years (Figure 3). The off-Site downgradient deep well (MW-5D) shows and has always shown benzene concentrations below the laboratory detection limit. It is unknown if the reported concentration in MW-5S is due to benzene plume migration or is an anomalous result. The laboratory report is presented in Appendix A. Time versus concentration graphs for benzene for the permanent and temporary wells are provided in Appendix B. The graphs show the concentration of benzene for each permanent and temporary well that had a detectable concentration and presents data that have been collected since 1992. The temporary wells were installed in 2007; therefore, data for those wells are only included since 2007.

Select groundwater samples (MW-4S, MW-5S, MW-6S, TW-8 and TW-11) were analyzed for MNA parameters to evaluate the potential for benzene degradation in groundwater. A summary of groundwater field parameters measured during sampling and MNA data is provided in Table 3-1. A review of field parameters show that DO concentrations ranged between ~0 and ~10 milligrams per liter (mg/L), with slightly less than neutral pH conditions within the plume (pH range from ~ 4 to 6). Based on the low DO and the reducing trend in benzene concentrations, benzene degradation continues to be occurring, however, at a relatively modest rate likely due to the lack of nutrients in the system and the acidity of the groundwater.

QA/QC samples were collected as described in Section 2.1. All analytical results have undergone a data validation process by Environmental Standards, Inc. of Valley Forge, Pennsylvania. The organic data were evaluated using the USEPA Region IV "Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services," Revision 2.1, July 1999, and the USEPA "National Functional Guidelines for Organic Data Review," October 1999. Based on the analytical data review by Environmental Standards, Inc., all benzene data were found acceptable for use without qualification. Some alkalinity, chloride, nitrate, sulfate, total organic carbon and iron results were qualified. The data validation report is provided in Appendix E.

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Fourteenth 2017 Sampling Report

Table 3-1. Summary of Analytical Results and Field Measurements – September 2017

Monitoring Well	Total Iron (µg/L)	Total Manganese (µg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Chloride (mg/L)	TOC (mg/L)	Total Alkalinity (mg/L)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)	Temperature (°C)	Benzene (µg/L)
MW-4S	< 50.0	99.1	34.2	< 0.10	11.0	2.7	16.1	3.22	0.161	0.98	0.81	122.4	17.82	1.0
MW-5D	NA	NA	NA	NA	NA	NA	NA	5.96	0.069	0.15	10.33	110.1	18.17	< 1.0
MW-5S	2,850	587	<1.0	0.13	7.1	0.90 J	23.4	3.19	0.061	0.41	0.59	178.0	18.51	< 1.0
MW-5S (Duplicate)	NA	NA	NA	NA	NA	NA	NA	3.19	0.061	0.41	0.59	178.0	18.51	< 1.0
MW-6S	213	68.5	6.0	0.12	1.1	1.9	3.1 J	2.26	0.037	8.72	3.67	181.1	20.49	< 1.0
TW-8	NA	NA	NA	NA	NA	NA	NA	4.29	0.112	0.00	0.93	-23.9	16.58	4.1
TW-9	NA	NA	NA	NA	NA	NA	NA	4.47	0.074	95.7	9.21	135.1	19.43	0.37 J
TW-11	35.6 J	342	2.9	< 0.10	22.1	4.7	21.1	4.79	0.133	2.97	2.91	49.8	17.14	3.0

°C = Celsius
µg/L = micrograms per Liter
J = Estimated value
µS/cm = microsiemens per centimeter
TOC = Total Organic Carbon
mV = millivolt
NTU = Nephelometric Turbidity Unit
NA = Not Analyzed
mg/L = milligrams per Liter

3.1 Hydrogeology

The groundwater level measurements for the September 2017 event are presented in Table 3-2. The water elevations in the groundwater monitoring wells reached a maximum elevation of 829.01 feet above mean sea level (amsl) in the southwest portion of the Site (MW-6S) and a minimum elevation of 821.62 feet amsl in downgradient well TW-8. Based on the depth to water measurements from these groundwater monitoring wells, the groundwater flow direction in September 2017 is generally toward the northwest (Figure 3) similar to prior monitoring events. Hydrographs for wells MW-4S, TW-8 and TW-11 are provided in Appendix B.

Table 3-2. Summary of Groundwater Elevation Data – September 2017

Monitoring Well	Total Depth (feet)	Casing Elevation (feet)	Groundwater Depth (feet) below top of casing	Groundwater Elevation
MW-4S	31.55	843.93	17.77	826.16
MW-5D	59.72	832.00	9.04	822.96
MW-5S	23.99	830.81	8.55	822.26
MW-6S	20.05	841.37	12.36	829.01
TW-8	23.28	840.92	19.20	821.62
TW-9	15.17	834.32	9.66	824.66
TW-11	22.61	841.84	16.59	825.25

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Fountain Inn 2017 Sampling Report

3.2 Investigation-Derived Waste

Sampling equipment was decontaminated according to methods in the project SAP[1]. Investigation-derived waste (IDW) generated during sampling (i.e., purge water and decontamination water) was contained on Site. Brown and Caldwell has coordinated the disposal of IDW by Waste Management, however, the disposal of the material has not been completed by the time of submittal of this report.

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Fountain Inn 2017 Sampling Report

Section 4

Summary

Based on results from the 18-month groundwater sampling event, the following summary can be derived based on current and historical data:

- Based on the September 2017 data, all the monitoring wells on site have benzene concentrations that are below the Site remediation goal of 5 µg/L. The highest benzene concentration was in TW-8 with a concentration of 4.1 µg/L.
- Overall, the benzene plume appears to be shrinking with benzene concentrations continuing to decrease in most wells. Low DO and pH values below the neutral range appear to be retarding benzene degradation to some extent.
- Groundwater levels measured in the permanent wells during the September 2017 groundwater sampling event varied between approximately 1 to 5 feet lower than those for the March 2016 event. Groundwater flow direction is northwesterly which is consistent with prior monitoring events.

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Fountain Fall 2017 Sampling Report

Section 5

Limitations

This report was prepared solely for Kinder Morgan Company in accordance with the standards of the environmental consulting industry at the time the services were performed and in accordance with the contract between Kinder Morgan and Brown and Caldwell dated September 5, 2017. This report is governed by the specific scope of work authorized by Kinder Morgan Company and is not intended to be relied upon by any other party. Brown and Caldwell relied on information or instructions provided by Kinder Morgan Company and other parties and, unless otherwise expressly indicated, has made no independent investigation as to the validity, completeness, or accuracy of such information. This report makes no representation or warranty that environmental contamination does not exist at this site beyond that described in this report.

List of Figures

Figure 1. Site Location Map

Figure 2. Site Map

Figure 3. September 2017 Shallow Groundwater Potentiometric Surface and Benzene Concentration Map

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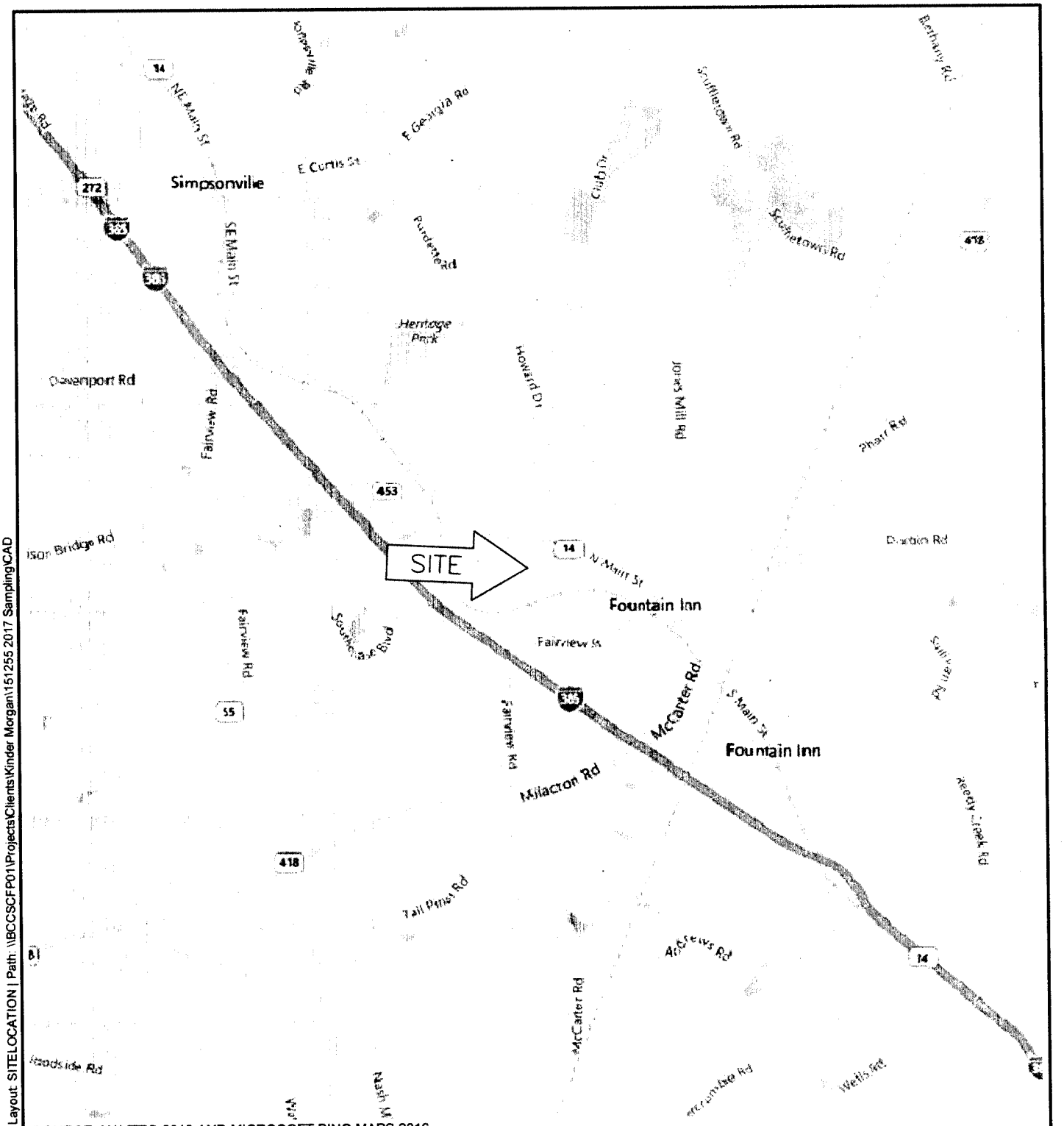
Fountain Inn 2017 Sampling Report

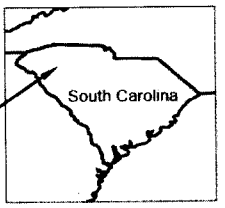


SOURCE: NAVTEQ 2010 AND MICROSOFT BING MAPS 2016

0 0.5 1

SCALE IN MILES

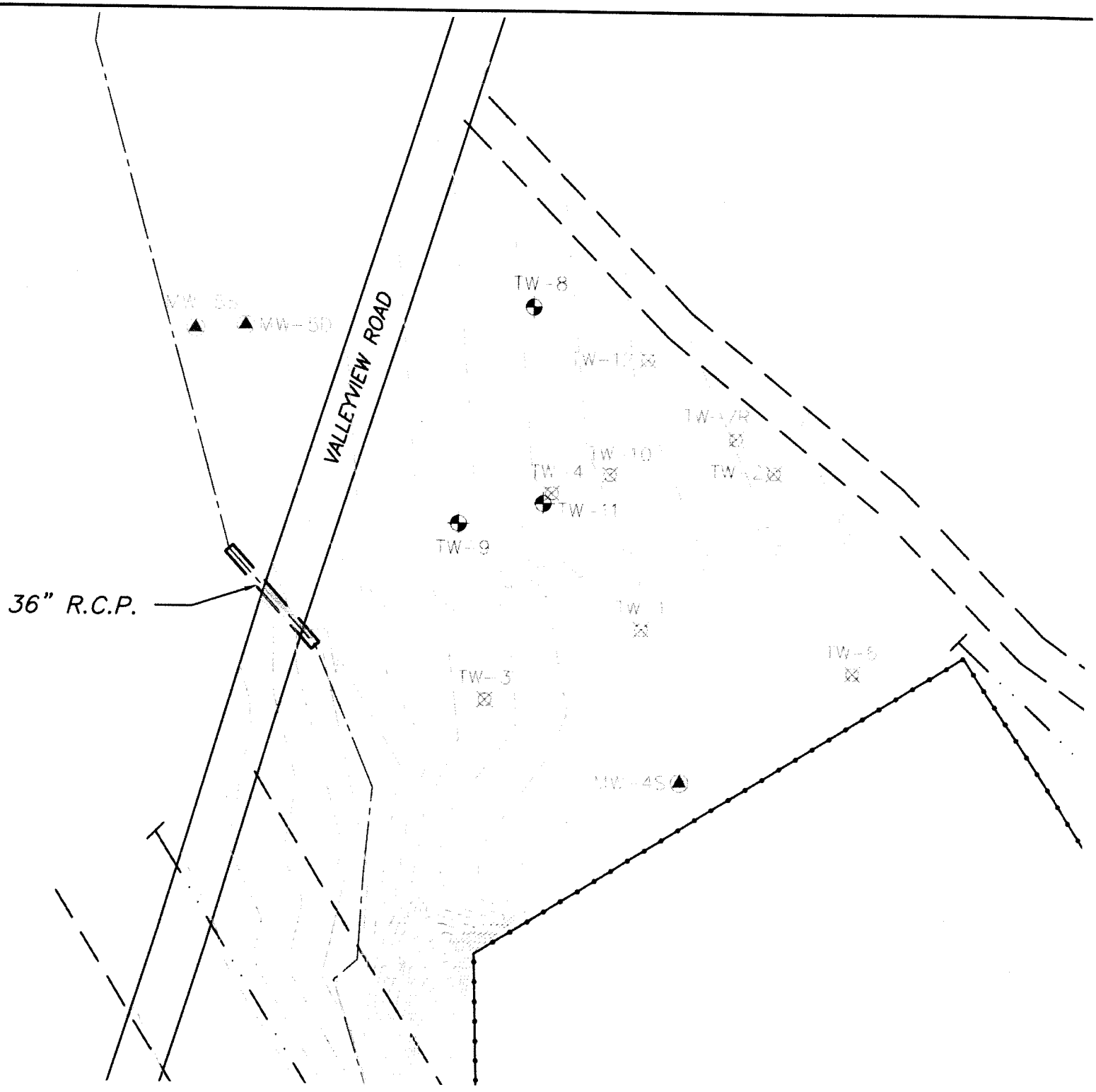
SITE



Brown AND Caldwell

Figure 1
SITE LOCATION
BEAUNIT CIRCULAR KNIT AND DYEING PLANT
NPL SITE
FOUNTAIN INN, SOUTH CAROLINA

DMCCLOY | Oct 24, 2017 - 5:00PM | Dwg: Site Loc | Layout: SITELOCATION | Path: \\BCCSCFP01\Projects\Clients\Kinder Morgan\151255 2017 Sampling\CAD



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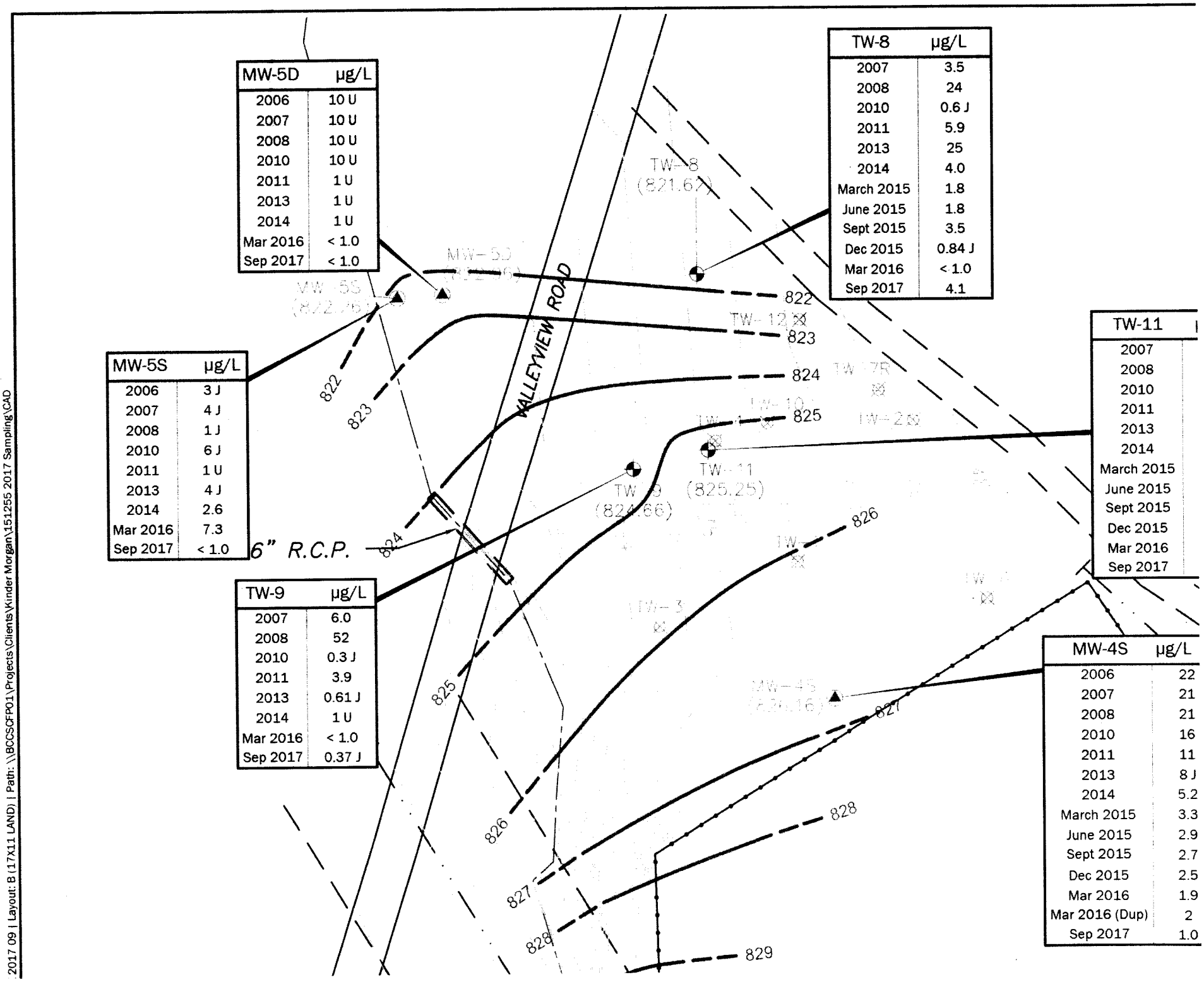

MW-5D	µg/L
2006	10 U
2007	10 U
2008	10 U
2010	10 U
2011	1 U
2013	1 U
2014	1 U
Mar 2016	< 1.0
Sep 2017	< 1.0

MW-5S	µg/L
2006	3 J
2007	4 J
2008	1 J
2010	6 J
2011	1 U
2013	4 J
2014	2.6
Mar 2016	7.3
Sep 2017	< 1.0

TW-9	µg/L
2007	6.0
2008	52
2010	0.3 J
2011	3.9
2013	0.61 J
2014	1 U
Mar 2016	< 1.0
Sep 2017	0.37 J

TW-8	µg/L
2007	3.5
2008	24
2010	0.6 J
2011	5.9
2013	25
2014	4.0
March 2015	1.8
June 2015	1.8
Sept 2015	3.5
Dec 2015	0.84 J
Mar 2016	< 1.0
Sep 2017	4.1

TW-11	
2007	
2008	
2010	
2011	
2013	
2014	
March 2015	
June 2015	
Sept 2015	
Dec 2015	
Mar 2016	
Sep 2017	

MW-4S	µg/L
2006	22
2007	21
2008	21
2010	16
2011	11
2013	8 J
2014	5.2
March 2015	3.3
June 2015	2.9
Sept 2015	2.7
Dec 2015	2.5
Mar 2016	1.9
Mar 2016 (Dup)	2
Sep 2017	1.0

2017 09 | Layout: B (17X11 LAND) | Path: \\BCCSCFP01\Projects\Clients\Kinder Morgan\151255 2017 Sampling\CAD

Appendix A: Laboratory Analytical Data

Use of contents on this sheet is subject to the limitations specified at the end of this document
Fountain Inn 2017 Sampling Report

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October 09, 2017

Reinhard Ruhmke
Brown and Caldwell
5430 Wade Park Blvd
Raleigh, NC 27607

RE: Project: Fountain Inn Sampling
Pace Project No.: 92357050

Dear Reinhard Ruhmke:
Enclosed are the analytical results for sample(s) received by the laboratory on September 28, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Ammie Martin, Environmental Standards, Inc.

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CERTIFICATIONS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
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
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Drive, 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/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92357050001	MW-4S	Water	09/27/17 17:25	09/28/17 10:45
92357050002	MW-5S	Water	09/27/17 13:15	09/28/17 10:45
92357050003	MW-6S	Water	09/27/17 15:30	09/28/17 10:45
92357050004	MW-5D	Water	09/27/17 11:50	09/28/17 10:45
92357050005	TW-8	Water	09/26/17 18:05	09/28/17 10:45
92357050006	TW-9	Water	09/27/17 10:05	09/28/17 10:45
92357050007	Duplicate	Water	09/27/17 12:00	09/28/17 10:45
92357050008	Trip Blank	Water	09/27/17 00:00	09/28/17 10:45

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SAMPLE ANALYTE COUNT

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92357050001	MW-4S	EPA 6010	SH1	2	PASI-A
		EPA 8260	CAH	4	PASI-C
		SM 2320B	KDF1	1	PASI-A
		SM 5310B	KDF1	1	PASI-A
		EPA 9056A	MDW	3	PASI-A
92357050002	MW-5S	EPA 6010	SH1	2	PASI-A
		EPA 8260	CAH	4	PASI-C
		SM 2320B	KDF1	1	PASI-A
		SM 5310B	KDF1	1	PASI-A
		EPA 9056A	MDW	3	PASI-A
92357050003	MW-6S	EPA 6010	SH1	2	PASI-A
		EPA 8260	CAH	4	PASI-C
		SM 2320B	KDF1	1	PASI-A
		SM 5310B	KDF1	1	PASI-A
		EPA 9056A	MDW	3	PASI-A
92357050004	MW-5D	EPA 8260	CAH	4	PASI-C
92357050005	TW-8	EPA 8260	CAH	4	PASI-C
92357050006	TW-9	EPA 8260	CAH	4	PASI-C
92357050007	Duplicate	EPA 8260	CAH	4	PASI-C
92357050008	Trip Blank	EPA 8260	CAH	4	PASI-C

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 6010**
Description: 6010 MET ICP
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 8260**
Description: 8260 MSV Low Level SC
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
8 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (Including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **SM 5310B**
Description: 5310B TOC
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for SM 5310B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for EPA 9056A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: MW-4S **Lab ID: 92357050001** Collected: 09/27/17 17:25 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A								
Iron	ND	ug/L	50.0	25.0	1	10/04/17 20:40	10/05/17 22:27	7439-89-6	
Manganese	**99.1**	ug/L	5.0	2.5	1	10/04/17 20:40	10/05/17 22:27	7439-96-5	
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	**1.0**	ug/L	1.0	0.25	1		09/30/17 10:51	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		09/30/17 10:51	460-00-4	
1,2-Dichloroethane-d4 (S)	114	%	70-130		1		09/30/17 10:51	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		09/30/17 10:51	2037-26-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**16.1**	mg/L	5.0	1.0	1		09/30/17 02:46		
5310B TOC	Analytical Method: SM 5310B								
Total Organic Carbon	**2.7**	mg/L	1.0	0.50	1		10/09/17 13:18	7440-44-0	
9056 IC Anions 48hr	Analytical Method: EPA 9056A								
Chloride	**11.0**	mg/L	1.0	0.50	1		09/29/17 01:06	16887-00-6	
Nitrate as N	ND	mg/L	0.10	0.050	1		09/29/17 01:06	14797-55-8	
Sulfate	**34.2**	mg/L	1.0	0.50	1		09/29/17 01:06	14808-79-8	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: MW-5S **Lab ID: 92357050002** Collected: 09/27/17 13:15 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A								
Iron	**2850**	ug/L	50.0	25.0	1	10/04/17 20:40	10/05/17 22:43	7439-89-6	
Manganese	**578**	ug/L	5.0	2.5	1	10/04/17 20:40	10/05/17 22:43	7439-96-5	
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		09/30/17 13:08	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	100	%	70-130		1		09/30/17 13:08	460-00-4	
1,2-Dichloroethane-d4 (S)	117	%	70-130		1		09/30/17 13:08	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		09/30/17 13:08	2037-26-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**23.4**	mg/L	5.0	1.0	1		09/30/17 03:22		
5310B TOC	Analytical Method: SM 5310B								
Total Organic Carbon	**0.90J**	mg/L	1.0	0.50	1		10/09/17 13:57	7440-44-0	
9056 IC Anions 48hr	Analytical Method: EPA 9056A								
Chloride	**7.1**	mg/L	1.0	0.50	1		09/29/17 00:34	16887-00-6	
Nitrate as N	**0.13**	mg/L	0.10	0.050	1		09/29/17 00:34	14797-55-8	
Sulfate	ND	mg/L	1.0	0.50	1		09/29/17 00:34	14808-79-8	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: MW-6S **Lab ID: 92357050003** Collected: 09/27/17 15:30 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A								
Iron	**213**	ug/L	50.0	25.0	1	10/04/17 20:40	10/05/17 22:47	7439-89-6	
Manganese	**68.5**	ug/L	5.0	2.5	1	10/04/17 20:40	10/05/17 22:47	7439-96-5	
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		09/30/17 13:25	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		09/30/17 13:25	460-00-4	
1,2-Dichloroethane-d4 (S)	118	%	70-130		1		09/30/17 13:25	17060-07-0	
Toluene-d8 (S)	98	%	70-130		1		09/30/17 13:25	2037-26-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**3.1J**	mg/L	5.0	1.0	1		09/30/17 03:33		
5310B TOC	Analytical Method: SM 5310B								
Total Organic Carbon	**1.9**	mg/L	1.0	0.50	1		10/09/17 14:07	7440-44-0	
9056 IC Anions 48hr	Analytical Method: EPA 9056A								
Chloride	**1.1**	mg/L	1.0	0.50	1		09/29/17 00:50	16887-00-6	
Nitrate as N	**0.12**	mg/L	0.10	0.050	1		09/29/17 00:50	14797-55-8	
Sulfate	**6.0**	mg/L	1.0	0.50	1		09/29/17 00:50	14808-79-8	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: MW-5D **Lab ID: 92357050004** Collected: 09/27/17 11:50 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		09/30/17 13:42	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		09/30/17 13:42	460-00-4	
1,2-Dichloroethane-d4 (S)	116	%	70-130		1		09/30/17 13:42	17060-07-0	
Toluene-d8 (S)	97	%	70-130		1		09/30/17 13:42	2037-26-5	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: TW-8 **Lab ID: 92357050005** Collected: 09/26/17 18:05 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	**4.1**	ug/L	1.0	0.25	1		09/30/17 11:08	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-130		1		09/30/17 11:08	460-00-4	
1,2-Dichloroethane-d4 (S)	115	%	70-130		1		09/30/17 11:08	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		09/30/17 11:08	2037-26-5	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: TW-9 **Lab ID: 92357050006** Collected: 09/27/17 10:05 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	**0.37J**	ug/L	1.0	0.25	1		10/01/17 22:56	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	105	%	70-130		1		10/01/17 22:56	460-00-4	
1,2-Dichloroethane-d4 (S)	81	%	70-130		1		10/01/17 22:56	17060-07-0	
Toluene-d8 (S)	109	%	70-130		1		10/01/17 22:56	2037-26-5	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: Duplicate **Lab ID: 92357050007** Collected: 09/27/17 12:00 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		10/01/17 23:13	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		1		10/01/17 23:13	460-00-4	
1,2-Dichloroethane-d4 (S)	78	%	70-130		1		10/01/17 23:13	17060-07-0	
Toluene-d8 (S)	111	%	70-130		1		10/01/17 23:13	2037-26-5	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Sample: Trip Blank **Lab ID: 92357050008** Collected: 09/27/17 00:00 Received: 09/28/17 10:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		09/30/17 08:16	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		1		09/30/17 08:16	460-00-4	
1,2-Dichloroethane-d4 (S)	110	%	70-130		1		09/30/17 08:16	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		09/30/17 08:16	2037-26-5	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380827 Analysis Method: EPA 6010
QC Batch Method: EPA 3010A Analysis Description: 6010 MET
Associated Lab Samples: 92357050001, 92357050002, 92357050003

METHOD BLANK: 2110270 Matrix: Water
Associated Lab Samples: 92357050001, 92357050002, 92357050003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	25.0	10/05/17 22:19	
Manganese	ug/L	ND	5.0	2.5	10/05/17 22:19	

LABORATORY CONTROL SAMPLE: 2110271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5000	4400	88	80-120	
Manganese	ug/L	500	480	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2110272 2110273

Parameter	Units	92357050001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	ND	5000	5000	4820	4700	96	94	75-125	3	20	
Manganese	ug/L	99.1	500	500	580	564	96	93	75-125	3	20	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380073 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV Low Level SC
Associated Lab Samples: 92357050001, 92357050005, 92357050008

METHOD BLANK: 2106374 | Matrix: Water
Associated Lab Samples: 92357050001, 92357050005, 92357050008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	0.25	09/30/17 05:24	
1,2-Dichloroethane-d4 (S)	%	110	70-130		09/30/17 05:24	
4-Bromofluorobenzene (S)	%	101	70-130		09/30/17 05:24	
Toluene-d8 (S)	%	98	70-130		09/30/17 05:24	

LABORATORY CONTROL SAMPLE: 2106375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	45.1	90	70-130	
1,2-Dichloroethane-d4 (S)	%			110	70-130	
4-Bromofluorobenzene (S)	%			107	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE SAMPLE: 2108364

Parameter	Units	92357132012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	21.9	109	70-130	
1,2-Dichloroethane-d4 (S)	%				99	70-130	
4-Bromofluorobenzene (S)	%				104	70-130	
Toluene-d8 (S)	%				99	70-130	

SAMPLE DUPLICATE: 2108365

Parameter	Units	92357125002 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	118	79	40		
4-Bromofluorobenzene (S)	%	100	95	5		
Toluene-d8 (S)	%	101	116	14		

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380076 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV Low Level SC
Associated Lab Samples: 92357050002, 92357050003, 92357050004

METHOD BLANK: 2106387 | Matrix: Water
Associated Lab Samples: 92357050002, 92357050003, 92357050004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	0.25	09/30/17 05:42	
1,2-Dichloroethane-d4 (S)	%	113	70-130		09/30/17 05:42	
4-Bromofluorobenzene (S)	%	96	70-130		09/30/17 05:42	
Toluene-d8 (S)	%	101	70-130		09/30/17 05:42	

LABORATORY CONTROL SAMPLE: 2106388

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	45.7	91	70-130	
1,2-Dichloroethane-d4 (S)	%			108	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2108366

Parameter	Units	92357125003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	22.6	113	70-130	
1,2-Dichloroethane-d4 (S)	%				102	70-130	
4-Bromofluorobenzene (S)	%				100	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2108367

Parameter	Units	92357125004 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	118	85	32		
4-Bromofluorobenzene (S)	%	100	102	2		
Toluene-d8 (S)	%	101	105	4		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380337
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Low Level SC
Associated Lab Samples: 92357050006, 92357050007

METHOD BLANK: 2107692
Matrix: Water
Associated Lab Samples: 92357050006, 92357050007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	0.25	10/01/17 17:04	
1,2-Dichloroethane-d4 (S)	%	85	70-130		10/01/17 17:04	
4-Bromofluorobenzene (S)	%	102	70-130		10/01/17 17:04	
Toluene-d8 (S)	%	109	70-130		10/01/17 17:04	

LABORATORY CONTROL SAMPLE: 2107693

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	44.3	89	70-130	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			105	70-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107694 2107695

Parameter	Units	92357050006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/L	0.37J	20	20	22.5	23.2	110	114	70-130	3	30	
1,2-Dichloroethane-d4 (S)	%						100	101	70-130			
4-Bromofluorobenzene (S)	%						102	106	70-130			
Toluene-d8 (S)	%						98	100	70-130			

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380022 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Associated Lab Samples: 92357050001, 92357050002, 92357050003

METHOD BLANK: 2106132 | Matrix: Water
Associated Lab Samples: 92357050001, 92357050002, 92357050003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	1.0	09/30/17 02:26	

LABORATORY CONTROL SAMPLE: 2106133

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	49.1	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2106134 2106135

Parameter	Units	92357050001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	16.1	50	50	68.9	69.9	106	108	80-120	1	25	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 381457 Analysis Method: SM 5310B
QC Batch Method: SM 5310B Analysis Description: 5310B TOC
Associated Lab Samples: 92357050001, 92357050002, 92357050003

METHOD BLANK: 2113870 Matrix: Water
Associated Lab Samples: 92357050001, 92357050002, 92357050003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.50	10/09/17 12:37	

LABORATORY CONTROL SAMPLE: 2113871

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	24.2	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113872 2113873

Parameter	Units	92357050001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	2.7	25	25	25.7	25.8	92	92	90-110	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 379995 | Analysis Method: EPA 9056A
QC Batch Method: EPA 9056A | Analysis Description: 9056 IC Anions
Associated Lab Samples: 92357050001, 92357050002, 92357050003

METHOD BLANK: 2106043 | Matrix: Water
Associated Lab Samples: 92357050001, 92357050002, 92357050003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	09/28/17 23:14	
Nitrate as N	mg/L	ND	0.10	0.050	09/28/17 23:14	
Sulfate	mg/L	ND	1.0	0.50	09/28/17 23:14	

LABORATORY CONTROL SAMPLE: 2106044

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.7	107	90-110	
Nitrate as N	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	50	53.0	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2106045 2106046

Parameter	Units	92357050001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	11.0	50	50	61.9	62.0	102	102	90-110	0	10	
Nitrate as N	mg/L	ND	2.5	2.5	2.6	2.5	102	102	90-110	0	10	
Sulfate	mg/L	34.2	50	50	80.5	80.8	93	93	90-110	0	10	

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QUALIFIERS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

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.

TNTC - Too Numerous To Count

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.

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-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92357050001	MW-4S	EPA 3010A	380827	EPA 6010	381009
92357050002	MW-5S	EPA 3010A	380827	EPA 6010	381009
92357050003	MW-6S	EPA 3010A	380827	EPA 6010	381009
92357050001	MW-4S	EPA 8260	380073		
92357050002	MW-5S	EPA 8260	380076		
92357050003	MW-6S	EPA 8260	380076		
92357050004	MW-5D	EPA 8260	380076		
92357050005	TW-8	EPA 8260	380073		
92357050006	TW-9	EPA 8260	380337		
92357050007	Duplicate	EPA 8260	380337		
92357050008	Trip Blank	EPA 8260	380073		
92357050001	MW-4S	SM 2320B	380022		
92357050002	MW-5S	SM 2320B	380022		
92357050003	MW-6S	SM 2320B	380022		
92357050001	MW-4S	SM 5310B	381457		
92357050002	MW-5S	SM 5310B	381457		
92357050003	MW-6S	SM 5310B	381457		
92357050001	MW-4S	EPA 9056A	379995		
92357050002	MW-5S	EPA 9056A	379995		
92357050003	MW-6S	EPA 9056A	379995		

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Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Brown and Caldwell

Project #:

WO# : 92357050

92357050

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: 9-25-17 SM

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

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

Thermometer: ☐ IR Gun ID: T1761 ☑ Wet ☐ Blue ☐ None

Type of Ice:

Correction Factor: **Cooler Temp Corrected (°C):** 3.6

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: (JR) **Date:** 9/28

Project Manager SRF Review: (JR) **Date:** 9/28

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)

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 2 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

****Bottom half of box is to list number of bottles**

Project # **WO#: 92357050**

PM: PTE Due Date: 10/09/17

CLIENT: 92-BROWNC_KM

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1		2				1	X									3			3									
2		2				1	X									3			3									
3		2				1	X									3			3									
4																6												
5																3												
6																3												
7																3												
8																3												
9																2												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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	Brown & Caldwell	Report To	Reinhard Ruhmke	Attention	
Address	5430 Wade Park Blvd	Copy To		Company Name	
Raleigh, NC 27607				Address	
Email	rruhmke@brwncald.com	Purchase Order #		Pace Quote	
Phone	(919)424-1435 Fax	Project Name	Fountain Inn sampling	Pace Project Manager	taylor.ezell@pacelabs.com
Requested Due Date		Project #		Pace Profile #	7039-1

Regulatory Agency
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 (Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS)	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	Iron & Manganese by 6010	Benzene by 8260	Alkalinity, Sulfate, Nitrate, C	Total Organic Carbon	~~Trip BLANK~~	~~DI Water~~	Residual Chlorine (Y/N)	92357050	
1	MW-4S	WT	G	9/27	1725				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	001
2	MW-5S	WT	G	9/27	1315				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	002
3	MW-5D	WT	G	9/27	1150				3				X							X						004	
4	MW-6S	WT	G	9/27	1530				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	003
5	TW-8	WT	G	9/26	1805				3				X							X						005	
6	TW-9	WT	G	9/27	1005				3				X							X						006	
7	~~TW-10~~	WT																		X							
8	Duplicate	WT	G	9/27	1200				3				X							X						007	
9	~~Equipment Blank~~	WT																		X							
10	MS	WT	G	9/27	1005				3				X							X						(TW-9)	006
11	MSD	WT	G	9/27	1005				3				X							X						(TW-9)	1
12	~~NoClientID~~ TRIP BLANK	WT		—	—				2				X							X						008	

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)
	[signature] / BC	9/27	1850	[signature] / Pace Ltr	92877	1045	3.6	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GEOFF GACAT

SIGNATURE of SAMPLER: [signature]

DATE Signed: 9·27·17

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October 10, 2017

Reinhard Ruhmke
Brown and Caldwell
5430 Wade Park Blvd
Raleigh, NC 27607

RE: Project: Fountain Inn Sampling
Pace Project No.: 92357284

Dear Reinhard Ruhmke:
Enclosed are the analytical results for sample(s) received by the laboratory on September 29, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Ammie Martin, Environmental Standards, Inc.

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CERTIFICATIONS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
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
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, 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/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92357284001	TW-11	Water	09/28/17 10:20	09/29/17 10:23
92357284002	EQUIPMENT BLANK	Water	09/28/17 10:40	09/29/17 10:23
92357284003	TRIP BLANK	Water	09/28/17 00:00	09/29/17 10:23

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SAMPLE ANALYTE COUNT

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92357284001	**TW-11**	EPA 6010	SH1	2	PASI-A
		EPA 8260	CAH	4	PASI-C
		SM 2320B	CDC	1	PASI-A
		SM 5310B	KDF1	1	PASI-A
		EPA 9056A	CDC	3	PASI-A
92357284002	**EQUIPMENT BLANK**	EPA 8260	CAH	4	PASI-C
92357284003	**TRIP BLANK**	EPA 8260	CAH	4	PASI-C

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 6010**
Description: 6010 MET ICP
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 8260**
Description: 8260 MSV Low Level SC
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
3 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **SM 5310B**
Description: 5310B TOC
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for SM 5310B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for EPA 9056A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Sample: TW-11 **Lab ID: 92357284001** Collected: 09/28/17 10:20 Received: 09/29/17 10:23 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010A								
Iron	**35.6J**	ug/L	50.0	25.0	1	10/05/17 21:35	10/06/17 23:10	7439-89-6	
Manganese	**342**	ug/L	5.0	2.5	1	10/05/17 21:35	10/06/17 23:10	7439-96-5	
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	**3.0**	ug/L	1.0	0.25	1		10/08/17 19:24	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	90	%	70-130		1		10/08/17 19:24	460-00-4	
1,2-Dichloroethane-d4 (S)	108	%	70-130		1		10/08/17 19:24	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		10/08/17 19:24	2037-26-5	
2320B Alkalinity	Analytical Method: SM 2320B								
Alkalinity, Total as CaCO3	**21.1**	mg/L	5.0	1.0	1		10/06/17 04:38		
5310B TOC	Analytical Method: SM 5310B								
Total Organic Carbon	**4.7**	mg/L	1.0	0.50	1		10/09/17 14:18	7440-44-0	
9056 IC Anions 48hr	Analytical Method: EPA 9056A								
Chloride	**22.1**	mg/L	1.0	0.50	1		09/30/17 00:09	16887-00-6	
Nitrate as N	ND	mg/L	0.10	0.050	1		09/30/17 00:09	14797-55-8	
Sulfate	**2.9**	mg/L	1.0	0.50	1		09/30/17 00:09	14808-79-8	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Sample: EQUIPMENT BLANK **Lab ID: 92357284002** Collected: 09/28/17 10:40 Received: 09/29/17 10:23 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		10/08/17 13:43	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		10/08/17 13:43	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-130		1		10/08/17 13:43	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		10/08/17 13:43	2037-26-5	

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Sample: TRIP BLANK **Lab ID: 92357284003** Collected: 09/28/17 00:00 Received: 09/29/17 10:23 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level SC	Analytical Method: EPA 8260								
Benzene	ND	ug/L	1.0	0.25	1		10/08/17 14:01	71-43-2	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		1		10/08/17 14:01	460-00-4	
1,2-Dichloroethane-d4 (S)	106	%	70-130		1		10/08/17 14:01	17060-07-0	
Toluene-d8 (S)	101	%	70-130		1		10/08/17 14:01	2037-26-5	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381042
QC Batch Method: EPA 3010A
Associated Lab Samples: 92357284001

Analysis Method: EPA 6010
Analysis Description: 6010 MET

METHOD BLANK: 2111532
Matrix: Water
Associated Lab Samples: 92357284001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Iron	ug/L	ND	50.0	25.0	10/06/17 22:36	
Manganese	ug/L	ND	5.0	2.5	10/06/17 22:36	

LABORATORY CONTROL SAMPLE: 2111533

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5000	4980	100	80-120	
Manganese	ug/L	500	510	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2111534 2111535

Parameter	Units	92357297001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Iron	ug/L	19600	5000	5000	24400	23900	96	87	75-125	2	20	
Manganese	ug/L	848	500	500	1320	1320	95	94	75-125	0	20	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV Low Level SC
Associated Lab Samples: 92357284002, 92357284003

METHOD BLANK: 2113616 | Matrix: Water
Associated Lab Samples: 92357284002, 92357284003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	0.25	10/08/17 12:17	
1,2-Dichloroethane-d4 (S)	%	100	70-130		10/08/17 12:17	
4-Bromofluorobenzene (S)	%	99	70-130		10/08/17 12:17	
Toluene-d8 (S)	%	102	70-130		10/08/17 12:17	

LABORATORY CONTROL SAMPLE: 2113617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	49.5	99	70-130	
1,2-Dichloroethane-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2113618

Parameter	Units	92357782015 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	20.5	103	70-130	
1,2-Dichloroethane-d4 (S)	%				102	70-130	
4-Bromofluorobenzene (S)	%				103	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2113619

Parameter	Units	92357553001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	105	105	0		
4-Bromofluorobenzene (S)	%	99	100	1		
Toluene-d8 (S)	%	102	101	1		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch Method: EPA 8260
Associated Lab Samples: 92357284001

Analysis Method: EPA 8260
Analysis Description: 8260 MSV Low Level SC

METHOD BLANK: 2113660
Matrix: Water
Associated Lab Samples: 92357284001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/L	ND	1.0	0.25	10/08/17 12:35	
1,2-Dichloroethane-d4 (S)	%	98	70-130		10/08/17 12:35	
4-Bromofluorobenzene (S)	%	93	70-130		10/08/17 12:35	
Toluene-d8 (S)	%	103	70-130		10/08/17 12:35	

LABORATORY CONTROL SAMPLE: 2113661

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	49.1	98	70-130	
1,2-Dichloroethane-d4 (S)	%			97	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE SAMPLE: 2113662

Parameter	Units	92357553002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	ND	20	21.4	107	70-130	
1,2-Dichloroethane-d4 (S)	%				100	70-130	
4-Bromofluorobenzene (S)	%				99	70-130	
Toluene-d8 (S)	%				92	70-130	

SAMPLE DUPLICATE: 2113663

Parameter	Units	92357762001 Result	Dup Result	RPD	Max RPD	Qualifiers
Benzene	ug/L	ND	ND		30	
1,2-Dichloroethane-d4 (S)	%	104	101	3		
4-Bromofluorobenzene (S)	%	97	99	2		
Toluene-d8 (S)	%	102	99	4		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380961
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Associated Lab Samples: 92357284001

METHOD BLANK: 2111049
Matrix: Water
Associated Lab Samples: 92357284001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	5.0	1.0	10/06/17 04:17	

LABORATORY CONTROL SAMPLE: 2111050

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	50.9	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2111051 2111052

Parameter	Units	92357284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	21.1	50	50	73.0	72.9	104	104	80-120	0	25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381457
QC Batch Method: SM 5310B
Associated Lab Samples: 92357284001

Analysis Method: SM 5310B
Analysis Description: 5310B TOC

METHOD BLANK: 2113870
Associated Lab Samples: 92357284001

Matrix: Water

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	0.50	10/09/17 12:37	

LABORATORY CONTROL SAMPLE: 2113871

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	24.2	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2113872 2113873

Parameter	Units	92357050001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	2.7	25	25	25.7	25.8	92	92	90-110	0	10	

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QUALITY CONTROL DATA

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380191 | Analysis Method: EPA 9056A
QC Batch Method: EPA 9056A | Analysis Description: 9056 IC Anions
Associated Lab Samples: 92357284001

METHOD BLANK: 2107172 | Matrix: Water
Associated Lab Samples: 92357284001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	0.50	09/29/17 23:37	
Nitrate as N	mg/L	ND	0.10	0.050	09/29/17 23:37	
Sulfate	mg/L	ND	1.0	0.50	09/29/17 23:37	

LABORATORY CONTROL SAMPLE: 2107173

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	50	53.7	107	90-110	
Nitrate as N	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	50	53.2	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2107174 2107175

Parameter	Units	92357284001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	22.1	50	50	73.7	73.7	103	103	90-110	0	10	
Nitrate as N	mg/L	ND	2.5	2.5	2.6	2.6	105	105	90-110	0	10	
Sulfate	mg/L	2.9	50	50	54.4	54.5	103	103	90-110	0	10	

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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Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALIFIERS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

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.

TNTC - Too Numerous To Count

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.

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-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92357284001	**TW-11**	EPA 3010A	381042	EPA 6010	381243
92357284001	**TW-11**	EPA 8260	381399		
92357284002	**EQUIPMENT BLANK**	EPA 8260	381373		
92357284003	**TRIP BLANK**	EPA 8260	381373		
92357284001	**TW-11**	SM 2320B	380961		
92357284001	**TW-11**	SM 5310B	381457		
92357284001	**TW-11**	EPA 9056A	380191		

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Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

Laboratory receiving samples:

Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

WO#: 92357284

Sample Condition Upon Receipt

Client Name: Brown & Caldwell

Project #:

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: 9-29-17 SR

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

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

Thermometer: ☐ IR Gun ID: T1701

Type of Ice: ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 3.6

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: (PE) **Date:** 10/2

Project Manager SRF Review: (PE) **Date:** 10/2

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)

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

****Bottom half of box is to list number of bottles**

Project # WO#: 92357284

PM: PTE Due Date: 10/10/17

CLIENT: 82-EROLNC_KM

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic 2N Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9-3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1		2				1										3			3									
2																3												
3																2												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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:	Brown & Caldwell
Address	5430 Wade Park Blvd
Raleigh, NC 27607	
Email	rruhmke@brwncald.com
Phone: (919)424-1425	Fax
Requested Due Date	

Section B
Required Project Information:

Report To	Reinhard Ruhmke
Copy To	
Purchase Order #	
Project Name	Fountain Inn sampling
Project #	

Section C
Invoice Information:

Attention	
Company Name:	
Address	
Pace Quote	
Pace Project Manager	taylor.ezell@pacelabs.com
Pace Profile #	7039-1

Regulatory Agency
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	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test (Y/N)	Iron & Manganese by 6010	Benzene by 8260	Alkalinity, Sulfate, Nitrate, Cl	Total Organic Carbon	Trip BLANK	DI Water	Residual Chlorine (Y/N)	9235-7204
1 ~~10~~	~~NoClientID2~~ TW-11	WT		9/26	1020				9	X	X	X	X						X	X	X	X				001
2 ~~14~~	~~NoClientID3~~ EQUIPMENT BLANK	WT		9/26	1040				3				X							X						002
3 ~~15~~	~~NoClientID4~~ TRIP BLANK	WT		—	—				2				X							X						003
~~16~~																										
~~17~~																										
~~18~~																										
~~19~~																										
~~20~~																										
~~21~~																										
~~22~~																										
~~23~~																										
~~24~~																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature] / BC	9/26	1700	[signature] / Pace HU	9/27/17	1023	3.6	Y	N	Y

SAMPLE NAME AND SIGNATURE

PRINT Name of SAMPLE: GEOFF GACAT

SIGNATURE of SAMPLER: [signature] DATE Signed: 9-26-17

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

Intra-Regional Chain of Custody

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www.pacelabs.com

Workorder: 92357284 **Workorder Name:** FOUNTAIN INN SAMPLING **Owner Received Date:** 9/29/2017 **Due Date:** 10/10/2017

Received at:	Send To Lab:
Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Asheville 2225 Riverside Dr. Asheville, NC 28804 Phone (828)254-7176

Report To:
Taylor Ezell

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Unpreserved	Other				Requested Analysis: SM2320B	EPA 9056A	SM5310B	EPA 6010									LAB USE ONLY
1	TW-11	PS	9/28/2017 10:20	92357284001	Water	1	2	3				X	X	X	X									
2																								
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	RP Pace AVL	9/29/17 1800	[signature] /cf/stage/ HU	09/29/17 1830
2	[signature] /cf/stage/ AU	09/29/17 2125	Jon [signature] Pace AVL	9/29/17 2131
3				
4				

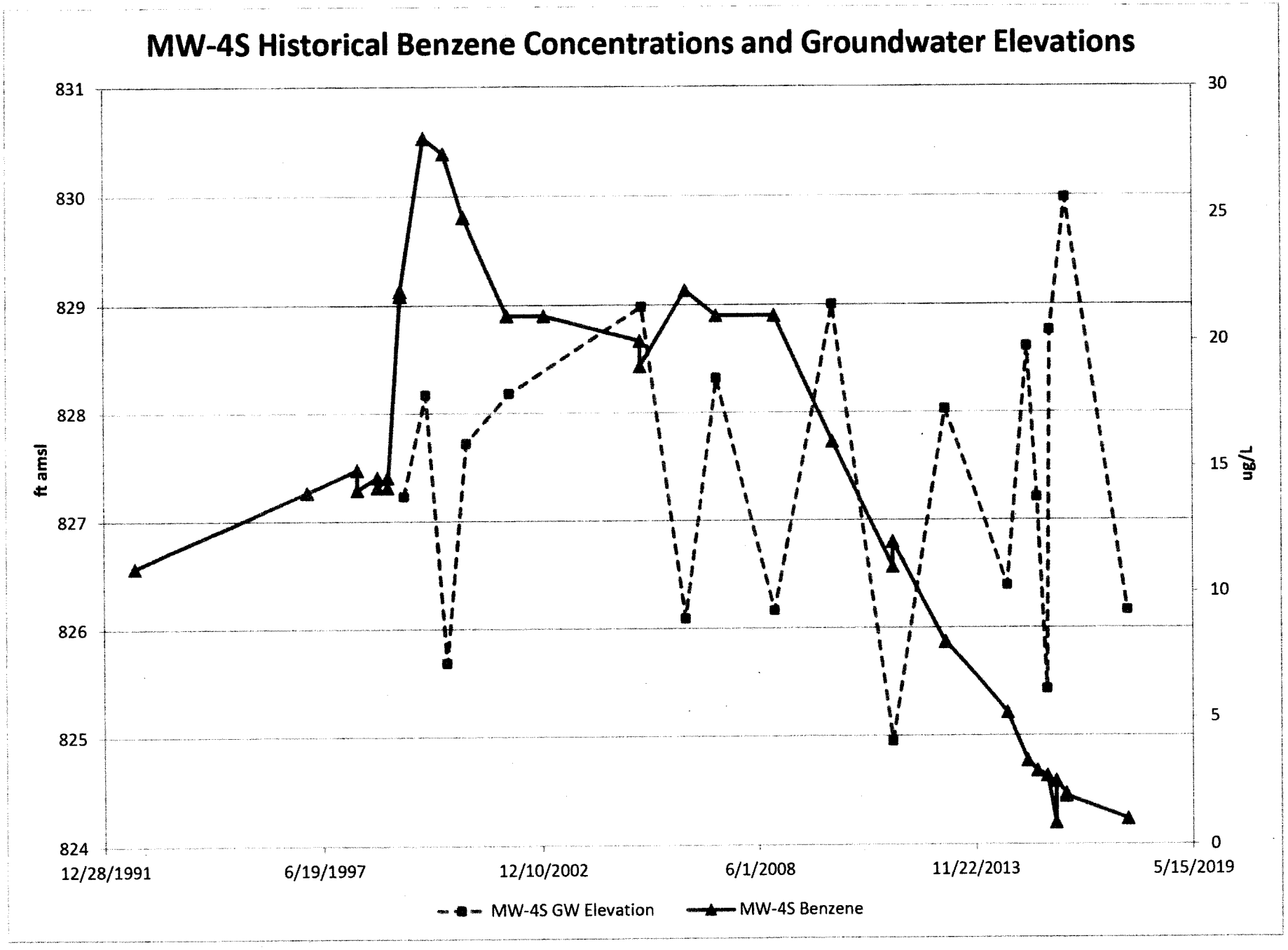
Comments

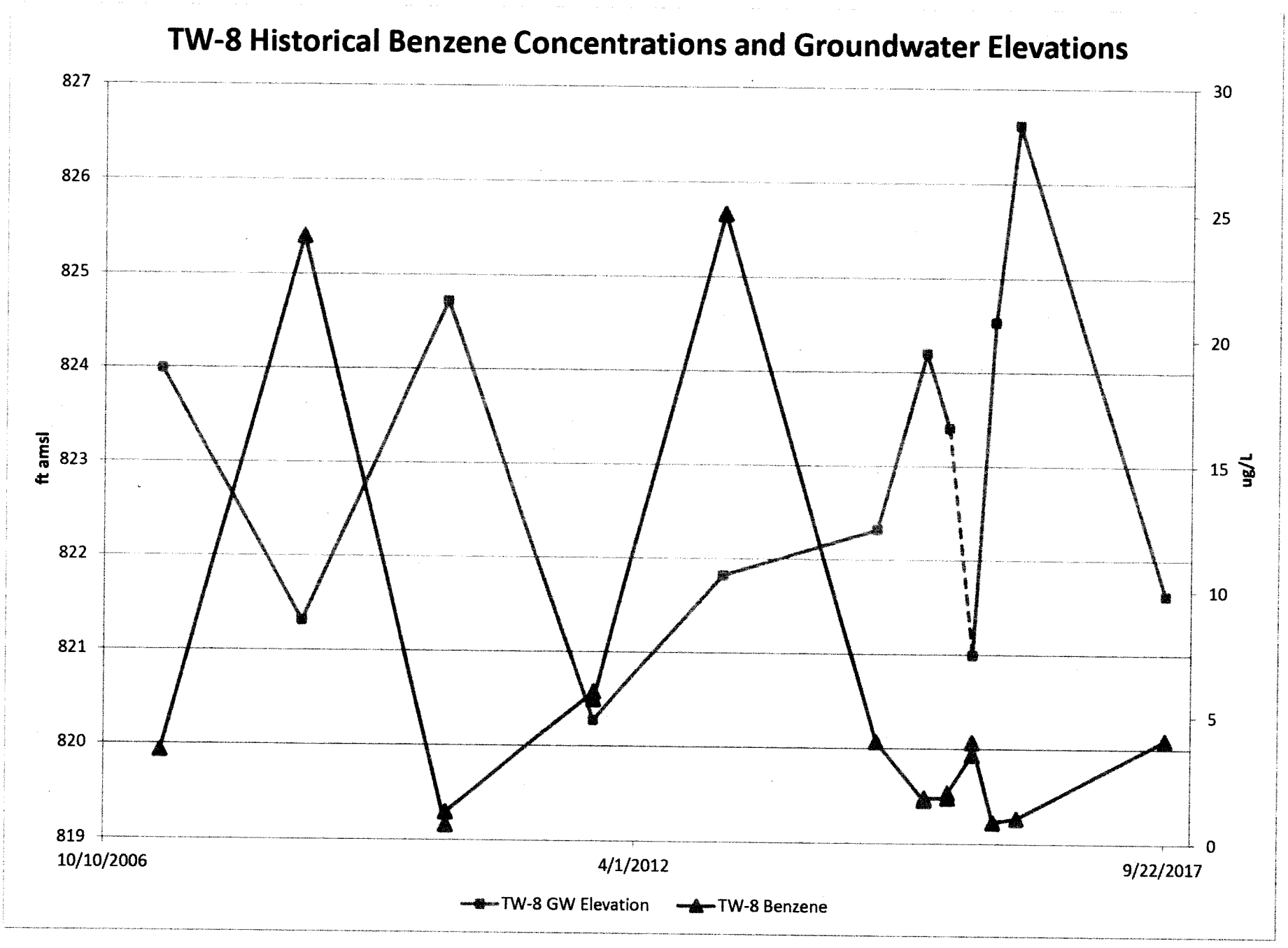
Cooler Temperature on Receipt 4.5 °C | **Custody Seal** Y or N | **Received on Ice** Y or N | **Samples Intact** Y or N

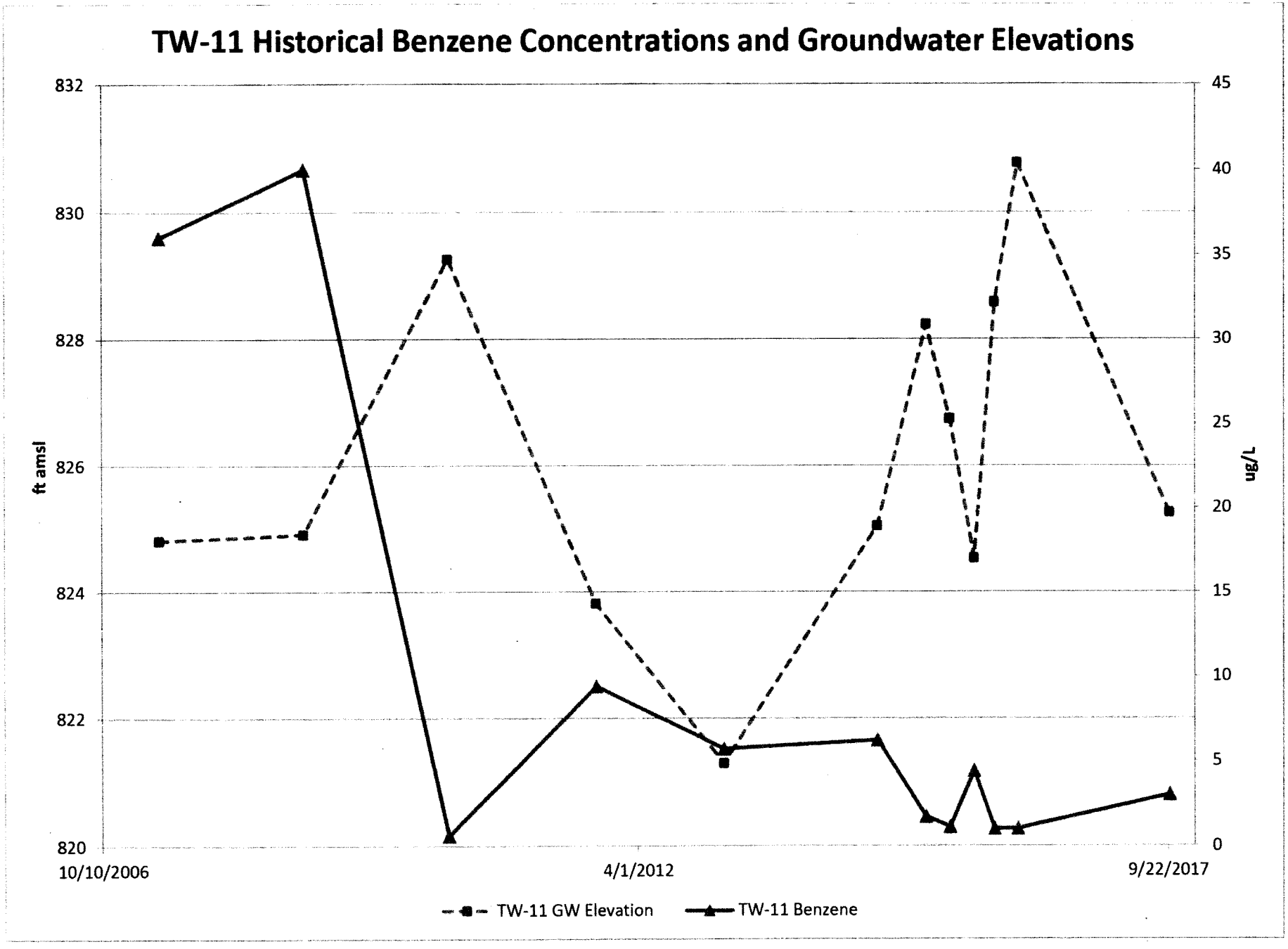
****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Appendix B: Benzene Trend Plots

Use of contents on this sheet is subject to the limitations specified at the end of this document
Fountain Inn 2017 Sampling Report


MW-4S Historical Benzene Concentrations and Groundwater Elevations
831
830
829
828
827
826
825
824
ft amsl
30
25
20
15
10
5
0
ug/L
12/28/1991
6/19/1997
12/10/2002
6/1/2008
11/22/2013
5/15/2019
MW-4S GW Elevation
MW-4S Benzene


TW-8 Historical Benzene Concentrations and Groundwater Elevations
827
826
825
824
823
822
821
820
819
ft amsl
30
25
20
15
10
5
0
ug/L
10/10/2006
4/1/2012
9/22/2017
TW-8 GW Elevation
TW-8 Benzene


TW-11 Historical Benzene Concentrations and Groundwater Elevations
832
830
828
826
824
822
820
ft amsl
45
40
35
30
25
20
15
10
5
0
ug/L
10/10/2006
4/1/2012
9/22/2017
TW-11 GW Elevation
TW-11 Benzene

Appendix C: Operation and Maintenance Checklists

Use of contents on this sheet is subject to the limitations specified at the end of this document
Fountain Inn 2017 Sampling Report

ACCESS CONTROLS
INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: Geoff Gagat **DATE: 09/27/2017**

PROJECT: Beauknit Fountain Inn **LOCATION: --**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are the site gate and lock in good operating condition? If no, note the deficiency in the comment section.	No
2)	Are there any signs deterioration of the integrity of the fence. If yes, note the location and problem in the comment section.	Yes
3)	Are the warning signs legible and in good condition? If no, note the deficiency in the comment section.	Yes

Comments:

Lock on access gate has been removed by Ralph (site manager). Fence has no top rail, some areas are damaged from tree falls.

Recommended Corrective Actions:

CAP MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** --

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Any signs of differential settlement across the cap area?	No
2)	Are there signs of excessive erosion over the cap area, for example Streaks, ruts, gullies?	Yes
3)	Are there signs of ponding over the cap area? Deficiency in the comment section.	Yes
4)	Does the vegetative cover need mowing, watering, or reseeding?	No

Comments:

No active ponding, but vegetation suggests water ponds on the south side, some gullies in west edge (vegetated). Deeper gullies on the northwest corner (just off the cap).

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **MW-4S**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	Yes

Comments:

Cracked pad, wasp nest, spider web

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **MW-5D**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

Wasp nest, spider webs

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **MW-5S**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

Spider webs

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **MW-6S**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **TW-8**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **TW-9**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	Yes
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

A fallen tree covers the well. Well box fills with water and has to be bailed out before opening well cap.

Recommended Corrective Actions:

WELL INSPECTION AND MAINTENANCE CHECKLIST

INSPECTOR: **Geoff Gagat** **DATE:** **09/27/2017**

PROJECT: **Beauknit Fountain Inn** **LOCATION:** **TW-11**

(Note below: YES; NO; or NA = NOT APPLICABLE)

1)	Are surface casing and well lock in good operating condition? If no, note the well number in the comment section.	No
2)	Any signs of excessive corrosion of surface casing? If yes, note the well number in the comment section.	No
3)	Are there any signs deterioration of the well concrete pad, for example, cracks, separation from surface casing, etc? If yes, note the well number in the comment section.	No

Comments:

No name plate in well box. Erosion undermining concrete pad. Both cover plate bolts are broken (well cannot be locked).

Recommended Corrective Actions:

Appendix D: Groundwater Sampling Field Data Sheets

Use of contents on this sheet is subject to the limitations specified at the end of this document.
Fountain Inn 2017 Sampling Report

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-4S

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. GAGAT

Project Location: Fountain Inn, South Carolina Weather: SUNNY, 90°F

2. WELL DATA

Date Measured: 9.26.17 Time: PM Temporary Well: ☐ Yes ☒ No

Casing Diameter: 2 inches Type: ☐ PVC ☒ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: 2 inches Type: ☐ PVC ☒ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 31.61 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 17.77 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 13.84 feet Well Volume: 2.3 gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.27.17 Time: 1630

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or STABILITY gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.04 gal/min

Equipment Model(s)
1. GEO PUMP
2. YSI 556
3. LAMOTTE 2020
4. SOLINST SKINNY DIPPER

Calibrated? ☒ Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
1640	0.25	4.33	18.02	0.161	60.8	3.30	2.18	18.90	
1650	0.7	4.39	17.69	0.161	57.8	3.21	2.02	19.41	
1700	1.2	3.28	17.58	0.160	118.4	0.98	1.76	19.82	
1710	1.6	3.24	17.56	0.159	118.3	0.85	1.01	19.82	
1720	2.0	3.22	17.82	0.161	122.4	0.81	0.98	19.82	

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Analysis Requested:
1. BENZENE
2. TOC
3. Fe, Mn
4. Cl⁻, ALK, SO_4, NO_3

Depth to Water at Time of Sampling: 19.82 Field Filtered? ☐ Yes ☒ No

Sample ID: MW-4S Sample Date: 9.27.17 Sample Time: 1725 # of Containers: 9

Duplicate Sample Collected? ☐ Yes ☒ No ID: — Duplicate False Time: — # of Containers: —

Equipment Blank Collected? ☐ Yes ☒ No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW- 5 S

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. Gagat

Project Location: Fountain Inn, South Carolina Weather: Sunny, 85°F

2. WELL DATA

Date Measured: 9.26.17 Time: PM Temporary Well: ☐Yes ☒No

Casing Diameter: 2 inches Type: ☐ PVC ☒ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: 2 inches Type: ☐ PVC ☒ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 23.99 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 8.55 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☐ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 15.4 feet Well Volume: 2.5 gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.27.17 Time: 1215

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or STABILITY gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.03 gal/min

Equipment Model(s)
1. GEO PUMP
2. YSI 556
3. LAMOTTE 2020
4. SOLINST SKINNY DIPPER

Calibrated? ☒Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
1225	0.25	3.21	18.76	0.055	178.0	1.23	4.30	9.01	
1235	0.5	3.15	18.56	0.055	176.3	0.80	2.63	9.09	
1245	0.9	3.14	18.49	0.058	173.0	0.78	0.82	9.15	
1255	1.25	3.15	18.57	0.061	175.2	0.65	0.58	9.15	
1305	1.6	3.19	18.51	0.061	178.0	0.59	0.41	9.15	

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Depth to Water at Time of Sampling: 9.15 Field Filtered? ☐ Yes ☒ No

Analysis Requested:
1. BENZENE
2. TOC
3. Fe, Mn
4. ALK, SULFATE, NITRATE, CHLORIDE

Sample ID: MW- 5 S Sample Date: 9.27.17 Sample Time: 1315 # of Containers: 9

Duplicate Sample Collected? ☒ Yes ☐ No ID: DUPLICATE Duplicate False Time: 1200 # of Containers: 3

Equipment Blank Collected? ☐ Yes ☒ No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

COLLECTED DUPLICATE FOR BENZENE.
(DUPLICATE; 1200)

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

FORM GW-2 (Rev 25.Nov.10 - gtg)

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW-5D

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. GAGNT

Project Location: Fountain Inn, South Carolina Weather: SUNNY, 82°F

2. WELL DATA

Date Measured: 9.26.17 Time: PM Temporary Well: ☐Yes ☒No

Casing Diameter: 2 inches Type: ☐ PVC ☒ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: — inches Type: ☐ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 59.72 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 9.04 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☐ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 50.7 feet Well Volume: 8.47 gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.27.17 Time: 1105

Equipment Model(s)

1. GEOPUMP
2. YSI 556
3. LAMOTTE 2020
4. SOLINST SKIPPY DIPPER

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or STABILITY gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.03 gal/min

Calibrated? ☐ Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
1115	0.2	5.93	18.51	0.069	103.9	10.33	0.27	10.19	
1125	0.5	6.00	18.33	0.069	105.6	10.23	0.22	10.64	
1135	0.9	5.99	18.18	0.069	107.8	10.23	0.18	11.40	
1145	1.4	5.96	18.17	0.069	110.1	10.33	0.15	11.78	
—	—	COLLECTED		SAMPLE	—	—	—	—	

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Analysis Requested:

1. BENZENE
2. _____
3. _____
4. _____

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Depth to Water at Time of Sampling: 11.78 Field Filtered? ☐ Yes ☒ No

Sample ID: MW-5D Sample Date: 9.27.17 Sample Time: 1150 # of Containers: 3

Duplicate Sample Collected? ☐ Yes ☒ No ID: — Duplicate False Time: — # of Containers: —

Equipment Blank Collected? ☐ Yes ☒ No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: MW- 6 S

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. GAGAT

Project Location: Fountain Inn, South Carolina Weather: SUNNY, 92°F

2. WELL DATA

Date Measured: 9.26.17 Time: PM Temporary Well: ☐Yes ☒No

Casing Diameter: 2 inches Type: ☒ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: 2 inches Type: ☒ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 20.36 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 12.36 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☐ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 8.0 feet Well Volume: 1.3 gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.27.17 Time: 1440

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or STABILITY gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.04 gal/min

Equipment Model(s)
1. GEO PUMP
2. YSI 556
3. LAMOTTE 2020
4. SOLINST SKINNY DIPPER

Calibrated? ☒ Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
1450	0.3	2.31	20.85	0.038	186.2	3.59	16.8	13.11	
1500	0.7	2.31	20.71	0.038	184.3	3.61	13.2	13.52	
1510	1.1	2.27	20.54	0.037	182.8	3.85	9.85	13.89	
1520	1.6	2.26	20.49	0.037	181.1	3.67	8.72	14.43	
			COLLECTED		SAMPLE				

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Depth to Water at Time of Sampling: 14.50 Field Filtered? ☐ Yes ☒ No

Analysis Requested:
1. BENZENE
2. Fe, Mn
3. TOC
4. ALK, Cl^-, SO_4, NO_3

Sample ID: MW- 6 S Sample Date: 9.27.17 Sample Time: 1530 # of Containers: 9

Duplicate Sample Collected? ☐ Yes ☒ No ID: — Duplicate False Time: — # of Containers: —

Equipment Blank Collected? ☐ Yes ☒ No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: Tw- 8

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. Gagat

Project Location: Fountain Inn, South Carolina Weather: Sunny, 90°F

2. WELL DATA

Date Measured: 9.26.17 Time: 1450 Temporary Well: ☐Yes ☒No

Casing Diameter: 3/4 inches Type: ☒ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: 3/4 inches Type: ☒ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 23.59 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 19.20 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☐ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 4.39 feet Well Volume: _____ gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.26.17 Time: 1720

Equipment Model(s)

1. Geo Pump
2. YSI 556
3. Lamotte 2020
4. Solinst Skinny Dipper

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or Stability gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.05 gal/min

Calibrated? ☒ Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
1730	0.4	4.21	16.71	0.113	-0.2	1.75	0.11	19.94	
1740	1.0	4.26	16.74	0.113	-7.9	1.29	0.08	19.94	
1750	1.5	4.28	16.67	0.112	-17.0	0.90	0.00	19.94	
1800	2.0	4.29	16.58	0.112	-23.9	0.93	0.00	19.94	
—			Collected		Sample	—			

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Analysis Requested:

1. Benzene
2. _____
3. _____
4. _____

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☐ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Depth to Water at Time of Sampling: 19.94 Field Filtered? ☐ Yes ☒ No

Sample ID: TW- 8 Sample Date: 9.26.17 Sample Time: 1805 # of Containers: 3

Duplicate Sample Collected? ☐ Yes ☒ No ID: — Duplicate False Time: — # of Containers: —

Equipment Blank Collected? ☐ Yes ☒ No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: TW-9

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. GAGAT

Project Location: Fountain Inn, South Carolina Weather: SUNNY, 75°F

2. WELL DATA

Date Measured: 9-26-17 Time: PM Temporary Well: ☐Yes ☒No

Casing Diameter: 3/4 inches Type: ☒PVC ☐Stainless ☐Galv. Steel ☐Teflon® ☐Other: _____

Screen Diameter: 3/4 inches Type: ☒PVC ☐Stainless ☐Galv. Steel ☐Teflon® ☐Other: _____

Total Depth of Well: 15.46 feet From: ☒Top of Well Casing (TOC) ☐Top of Protective Casing ☐Other: _____

Depth to Static Water: 9.66 feet From: ☒Top of Well Casing (TOC) ☐Top of Protective Casing ☐Other: _____

Depth to Product: — feet From: ☐Top of Well Casing (TOC) ☐Top of Protective Casing ☐Other: _____

Length of Water Column: 5.8 feet Well Volume: _____ gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9-27-17 Time: 0920

Equipment Model(s)

1. GEO PUMP
2. YSI 556
3. LAMOTTE 2020
4. SOLINST SKINNY DIPPER

Purge Method: ☐Bailer, Size: _____ ☐Bladder Pump ☐2" Sub. Pump ☐4" Sub. Pump ☐Centrifugal Pump ☒Peristaltic Pump ☐Inertial Lift Pump ☐Other: _____

Materials: Pump/Bailer ☐Polyethylene ☐Stainless ☐PVC ☐Teflon® ☐Other: _____ ☐Dedicated ☒Prepared Off-Site ☐Field-Cleaned ☐Disposable

Materials: Rope/Tubing ☐Polyethylene ☐Polypropylene ☐Teflon® ☐Nylon ☐Other: _____ ☐Dedicated ☐Prepared Off-Site ☐Field-Cleaned ☒Disposable

Volume to Purge (minimum): — well volumes or STABILITY gallons

Was well purged dry? ☒Yes ☐No Pumping Rate: 0.008 gal/min Calibrated? ☒Yes ☐No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
0930	0.07	4.49	19.06	0.075	136.6	9.63	92.8	14.79	
0940	0.15	4.47	19.43	0.074	135.1	9.21	95.7	15.29	
0944	WELL	PURGED	DRY AT	LOWEST	PUMP	RATE. WILL	LET	RECHARGE.	

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Analysis Requested:

1. BENZENE
2. _____
3. _____
4. _____

Method(s): ☐Bailer, Size: _____ ☐Bladder Pump ☐2" Sub. Pump ☐4" Sub. Pump ☐Centrifugal Pump ☒Peristaltic Pump ☐Inertial Lift Pump ☐Other: _____

Materials: Pump/Bailer ☐Polyethylene ☐Stainless ☐PVC ☐Teflon® ☐Other: _____ ☐Dedicated ☒Prepared Off-Site ☐Field-Cleaned ☐Disposable

Materials: Tubing/Rope ☐Polyethylene ☐Polypropylene ☐Teflon® ☐Nylon ☐Other: _____ ☐Dedicated ☐Prepared Off-Site ☐Field-Cleaned ☒Disposable

Depth to Water at Time of Sampling: 10.00 Field Filtered? ☐Yes ☒No

Sample ID: TW-9 Sample Date: 9-27-17 Sample Time: 1005 # of Containers: 3

Duplicate Sample Collected? ☒Yes ☐No ID: MS/MSD (TW-9) Duplicate False Time: 1005 # of Containers: 6

Equipment Blank Collected? ☐Yes ☒No ID: — Equipment Blank Time: — # of Containers: —

5. COMMENTS

TW-9 PURGED DRY AT LOWEST PUMP SPEED, WILL LET RECHARGE, THEN SAMPLE.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

FORM GW-2 (Rev 25.Nov.10 - gtg)

Signature

Brown AND Caldwell

GROUNDWATER SAMPLING FIELD DATA SHEET

WELL ID: TW-11

1. PROJECT INFORMATION

Project Number: 151255 Task Number: _____ Area of Concern: _____

Client: Kinder Morgan Personnel: G. Gagat

Project Location: Fountain Inn, South Carolina Weather: Sunny, 79°F

2. WELL DATA

Date Measured: 9.26.17 Time: PM Temporary Well: ☐Yes ☒No

Casing Diameter: 1 inches Type: ☒PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Screen Diameter: 1 inches Type: ☒ PVC ☐ Stainless ☐ Galv. Steel ☐ Teflon® ☐ Other: _____

Total Depth of Well: 22.87 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Static Water: 16.59 feet From: ☒ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Depth to Product: — feet From: ☐ Top of Well Casing (TOC) ☐ Top of Protective Casing ☐ Other: _____

Length of Water Column: 6.28 feet Well Volume: 0.26 gal Screened Interval (from GS): _____

Note: 1-in well = 0.041 gal/ft 2-in well = 0.167 gal/ft 4-in well = 0.667 gal/ft 6-in well = 1.469 gal/ft

3. PURGE DATA

Date Purged: 9.28.17 Time: 0925

Equipment Model(s)

1. GeoPump
2. YSI 556
3. Lamotte 2020
4. Solinst Skinny Dipper

Purge Method: ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☐ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Rope/Tubing ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Volume to Purge (minimum): — well volumes or Stability gallons

Was well purged dry? ☐ Yes ☒ No Pumping Rate: 0.02 gal/min Calibrated? ☒Yes ☐ No

Time	Cum. Gallons Removed (gal)	pH ±0.1 su	Temp ±2°C	Spec. Cond. ± 5%	ORP > of ±10% or ±20 mV	DO > of ±10% or ±0.2 mg/L	Turbidity ≤ 10 NTU	Water Level	Comments
0935	0.2	4.91	17.34	0.193	60.2	7.03	5.89	19.86	
0945	0.3	4.78	17.35	0.138	54.6	3.12	4.51	20.38	
0955	0.4	4.79	17.19	0.133	50.4	2.95	3.18	21.42	
1005	0.6	4.79	17.14	0.133	49.8	2.91	2.97	22.48	
—	—	Collected		Sample	—	—	—	—	

Purge data continued on next sheet? ☐

4. SAMPLING DATA

Analysis Requested:

1. Benzene
2. Fe, Mn
3. Alk, Cl⁻, SO₄, NO₃
4. TOC

Method(s): ☐ Bailer, Size: _____ ☐ Bladder Pump ☐ 2" Sub. Pump ☐ 4" Sub. Pump ☐ Centrifugal Pump ☒ Peristaltic Pump ☐ Inertial Lift Pump ☐ Other: _____

Materials: Pump/Bailer ☒ Polyethylene ☐ Stainless ☐ PVC ☐ Teflon® ☐ Other: _____ ☐ Dedicated ☒ Prepared Off-Site ☐ Field-Cleaned ☐ Disposable

Materials: Tubing/Rope ☒ Polyethylene ☐ Polypropylene ☐ Teflon® ☐ Nylon ☐ Other: _____ ☐ Dedicated ☐ Prepared Off-Site ☐ Field-Cleaned ☒ Disposable

Depth to Water at Time of Sampling: 22.48 Field Filtered? ☐ Yes ☒ No

Sample ID: TW-11 Sample Date: 9.28.17 Sample Time: 1020 # of Containers: 9

Duplicate Sample Collected? ☐ Yes ☒ No ID: — Duplicate False Time: — # of Containers: —

Equipment Blank Collected? ☒ Yes ☐ No ID: Equipment Blank Equipment Blank Time: 1040 # of Containers: 3

5. COMMENTS

Reached stability after 0.6 gal purge, w/ a lot of drawdown, letting well recharge some then collecting sample.

Note: Include comments such as well condition, odor, presence of NAPL, or other items not on the field data sheet.

FORM GW-2 (Rev 25.Nov.10 - gtg)

Signature

Appendix E: Data Validation Report

Use of contents on this sheet is subject to the limitations specified at the end of this document
Fountain Inn 2017 Sampling Report

ENVIRONMENTAL® STANDARDS 30 YEARS 1987 - 2017

November 16, 2017

Mr. David Zuvanich
Project Manager
Environmental Remediation Manager
Kinder Morgan, Inc.
1001 Louisiana St.
P.O. Box 2511
Houston, TX 77002

Dear Mr. Zuvanich:

Enclosed is the quality assurance review for the data generated from the analyses of 17 aqueous samples (including quality control samples) collected on September 26, 27, and 28, 2017, at the Beaunit National Priorities List Site in Fountain Inn, South Carolina.

Based on this review, one benzene, one alkalinity, one total organic carbon, and one iron result were qualified as estimated due to quantitation below the sample-specific reporting limit.

If you have any questions or comments, please do not hesitate to call.

Sincerely,

Ammie L. Martin
Senior Quality Assurance Chemist/
Project Manager

Sincerely,

Rock J. Vitale, CEAC
Technical Director of Chemistry/
Principal

ALM/RJV:sc/hm
Enc.

Copy to: Reinhard Ruhmke – Brown and Caldwell

1140 Valley Forge Road P.O. Box 810 Valley Forge, PA 19482 Tel: 610.935.5577 Fax: 610.935.5583 Web: www.envstd.com

ENVIRONMENTAL® STANDARDS 30 YEARS 1987 - 2017

QUALITY ASSURANCE REVIEW

OF THE AQUEOUS SAMPLES AND TRIP BLANKS COLLECTED ON

SEPTEMBER 26, 27, AND 28, 2017, AT THE BEAUNIT NPL SITE

IN FOUNTAIN INN, SOUTH CAROLINA

November 16, 2017

Prepared for:

KINDER MORGAN, INC.
1001 Louisiana St., Suite 1000
Houston, TX 77002

Prepared by:

ENVIRONMENTAL STANDARDS, INC.
1140 Valley Forge Road
P.O. Box 810
Valley Forge, PA 19482-0810

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Introduction

This quality assurance (QA) review was performed on analytical data for Sample Delivery Groups (SDGs) 92357050 and 92357284. These 17 aqueous samples (including quality control [QC] samples) were collected on September 26, 27, and 28, 2017, at the Beaunit National Priorities List (NPL) Site in Fountain Inn, South Carolina. The samples were analyzed by Pace Analytical Services, Inc. (Pace), in Huntersville, North Carolina, and by Pace in Asheville, North Carolina.

Thirteen samples were analyzed for benzene by "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition" (SW-846) Method 8260B; six samples were analyzed for manganese and iron by SW-846 Method 6010C and for total organic carbon (TOC) by Standard Method (SM) 5310B; and eight samples were analyzed for alkalinity by SM 2320B and anions (specifically, chloride, nitrate, and sulfate) by SW-846 Method 9056A. A comprehensive Contract Laboratory Program- (CLP-) like raw data package was prepared by the laboratories and was reviewed by Environmental Standards, Inc. (Environmental Standards).

This review has been performed with guidance from the US EPA Region IV "Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services Organic Analysis" (Revision 3.1, August 2008); the US EPA Region IV "Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services Inorganic Analysis" (Revision 2.0, September 2011); and in accordance with the "Sampling and Analysis Plan for Beaunit Corp. Circular Knit and Dyeing Plant Site Fountain Inn, South Carolina" (SAP; September 2014); the "Quality Assurance Project Plan for Beaunit Corp. Circular Knit and Dyeing Plant Site Fountain Inn, South Carolina" (QAPP; September 2014); the "National Functional Guidelines for Organic Data Review" (NFG; US EPA, October 1999); and the "National Functional Guidelines for Inorganic Data Review" (NFG; US EPA, February 1994). The SAP, QAPP, NFGs, Region IV data validation standard operating procedures (SOPs), and data reviewer's professional judgment were used in the interpretation of the QC analysis results and in the overall evaluation of the sample data deliverables. The validation guidance documents specifically address analyses performed in accordance with the CLP analytical methods, and are not completely applicable to the type of analyses and analytical protocol performed for these samples. Environmental Standards used professional judgment to determine the usability of the analytical results and compliance relative to the requirements in the analytical methods utilized by the laboratories.

All samples included in SDGs 92357050 and 92357284 were validated and are identified on Table 1. Table 1 presents the field sample identification, laboratory sample number, SDG, matrix, collection date, and parameter(s) analyzed and reviewed for each sample. Environmental Standards based the validation on an evaluation of the data deliverables provided by the laboratories for these SDGs.

The reported analytical results are presented as a summary of the data in Section 2. Data were examined to determine the compliance relative to the requirements specified in the analytical methods. Qualifier codes have been placed next to results to enable the data user to quickly assess the qualitative and/or quantitative reliability of any result. This critical QA review identifies data quality issues for specific samples and specific evaluation criteria. The data qualifications allow the data end-user to best understand the usability of the analytical results. Data not qualified in this report should be considered valid based on the QC criteria that have been reviewed. Details

of this QA review are presented in Section 1 of this report. This report was prepared to provide a critical review of the laboratory analyses and reported analytical results.
QA reviews of laboratory-generated data routinely identify various problems associated with analytical measurements, even from the most experienced and capable laboratories.

TABLE 1 – SUMMARY OF SAMPLE DATA REVIEWED

Field Sample Identification	Laboratory Sample Number(s)	SDG	Matrix	Date of Sample Collection	Parameter(s)
MW-4S	92357050001	92357050	Aq	9/27/17	B, M, TOC, Alk, An
MW-4SMS (Matrix Spike)	2110272 2113872 2106134 2106045	92357050	Aq	9/27/17	M TOC Alk An
MW-4SMSD (Matrix Spike Duplicate)	2110273 2113873 2106135 2106046	92357050	Aq	9/27/17	M TOC Alk An
MW-5S	92357050002	92357050	Aq	9/27/17	B, M, TOC, Alk, An
MW-6S	92357050003	92357050	Aq	9/27/17	B, M, TOC, Alk, An
MW-5D	92357050004	92357050	Aq	9/27/17	B
TW-8	92357050005	92357050	Aq	9/26/17	B
TW-9	92357050006	92357050	Aq	9/27/17	B
TW-9MS (Matrix Spike)	2107694	92357050	Aq	9/27/17	B
TW-9MSD (Matrix Spike Duplicate)	2107695	92357050	Aq	9/27/17	B
Duplicate (Field Duplicate of MW-5S)	92357050007	92357050	Aq	9/27/17	B
Trip Blank	92357050008	92357050	Aq	9/27/17	B
TW-11	92357284001	92357284	Aq	9/28/17	B, M, TOC, Alk, An
TW-11MS (Matrix Spike)	2111051 2107174	92357284	Aq	9/28/17	Alk An
TW-11MSD (Matrix Spike Duplicate)	2111052 2107175	92357284	Aq	9/28/17	Alk An
Equipment Blank	92357284002	92357284	Aq	9/28/17	B
Trip Blank	92357284003	92357284	Aq	9/28/17	B

NOTES:

B - Benzene by SW-846 Method 8260B. (13 analyses)
M - Total Metals (specifically, iron and manganese) by SW-846 Method 6010C. (6 analyses)
TOC - Total Organic Carbon by SM 5310B. (6 analyses)

TABLE 1 (Cont.)

NOTES (Cont.):

Alk	-	Alkalinity by SM 2320B. (8 analyses)
An	-	Anions (specifically chloride, nitrate, and sulfate) by SW-846 Method 9056A. (8 analyses)
Aq	-	Aqueous.

Section 1 Quality Assurance Review

A. Organic Data

The organic analyses of 13 aqueous samples (including QC samples) collected at the Beaunit NPL Site in Fountain Inn, South Carolina, on September 26, 27, and 28, 2017, were performed by Pace in Huntersville, North Carolina. All samples were analyzed for benzene by SW-846 Method 8260B. These analyses are identified on Table 1.

The findings offered in this report are based on a review of the holding times, condition of samples upon laboratory receipt, blank analysis results, bromofluorobenzene (BFB) tuning and mass calibration, matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision, laboratory control sample (LCS) recoveries, field duplicate precision, surrogate recoveries, retention times (RTs), calibrations, internal standard area counts and RTs, analytical sequence, the quantitation of positive results, and a critical evaluation of instrumental raw data.

The following issues and comments were identified for the data package provided for review. The data reviewer has edited the laboratory-reported data and QC summary forms based on the issues and comments listed in this QA review. Furthermore, the data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support these edits in the Organic Data Support Documentation (Section 3) of this review. The following issues and comments do not necessarily affect data usability. Usability is addressed in the Organic Data Qualifier section.

Deliverable Issue

- No deliverable issues were observed for this QA review.

Procedural Issue

- The Chain-of-Custody (COC) Records did not indicate the collection date and time for the trip blank samples in SDGs 92357050 and 92357284. According to the QAPP (Section A9.1), the COC Records should have been filled out completely to maintain traceability of all samples. Qualification of data was not warranted due to this issue.

Comments

1. In SDGs 92357050 and 92357284, the laboratory did not include the raw spectra or the background-subtracted spectra in the data packages provided. Upon Environmental Standards' request, the laboratory provided the missing spectra (see Project Correspondence [Section 6]).

2. The raw data quantitation report for SDG 92357050 sample TW-9 presented benzene as "not-detected"; however, a positive result of 0.37 µg/L was reported for benzene on the Analytical Results form. Upon Environmental Standards' request, the laboratory provided the revised quantitation report (see Section 6).

3. One field duplicate pair (SDG 92357050 sample MW-5S and its duplicate, sample Duplicate) was collected and analyzed for benzene with this dataset. Positive results for benzene were not reported in these samples.

4. In SDG 92357050, the laboratory did not summarize the internal standard area counts and RTs on the Internal Standard Area and Retention Time summary form for the Trip Blank analyzed on 9/30/17 at 0816. Upon Environmental Standards' request, the laboratory provided the revised summary form (see Section 6).

Data Evaluation

With respect to data usability, the principal area of concern is quantitation below the sample-specific reporting limit (RL). Based on a rigorous review of the data provided, the following data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the analytical method used for analysis may not require corrective action. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Organic Data Qualifier

- All results reported at concentrations less than the sample-specific RL (adjusted for dilution factors and/or sample volume) should be considered estimated and have been flagged "J" on the data tables.

A complete support documentation of this organic data QA review is presented in Section 3 of this report.

B. Inorganic Data

The inorganic analyses of eight aqueous samples (including QC samples) collected at the Beaunit NPL Site in Fountain Inn, South Carolina, on September 27 and 28, 2017, were performed by Pace in Asheville, North Carolina. Six samples were analyzed for manganese and iron by SW-846 Method 6010C and for TOC by SM 5310B, and eight samples were analyzed for alkalinity by SM 2320B and anions (specifically, chloride, nitrate, and sulfate) by SW-846 Method 9056A. These analyses are identified on Table 1.

The findings offered in this report are based on a review of the holding times, condition of samples upon laboratory receipt, blank analysis results, initial and continuing calibrations, RL standard results, LCS recoveries, MS/MSD recoveries and precision, serial dilution precision, interference check sample (ICS) results, internal standard recoveries, analytical sequence, and the quantitation of positive results.

The following issues and comments were identified for the data packages provided for review. The data reviewer has edited the laboratory-reported data and QC summary forms based on the issues and comments listed in this QA review. Furthermore, the data reviewer has included copies of all relevant raw data, QC forms, and other documentation needed to support these edits in the Inorganic Data Support Documentation (Section 4) of this review. The following issues and comments do not necessarily affect data usability. Usability is addressed in the Inorganic Data Qualifier section.

Deliverable Issue

- No deliverable issues were observed for this QA review.

Procedural Issues

1. In the alkalinity fraction of both SDGs, the laboratory analyzed the continuing calibration blanks (CCBs) prior to analyzing the continuing calibration verification (CCV) standards. According to the QAPP (Appendix B), CCBs should be analyzed immediately following the CCV standards. Qualification of data due to this issue was not warranted.

2. In the anions fraction of both SDGs, the laboratory analyzed a CCV standard following the initial calibration verification (ICV) standard instead of the initial calibration blank (ICB). According to the QAPP (Appendix B), ICBs should be analyzed immediately following ICV standards. Qualification of data due to this issue was not warranted.

Comments

1. In the metals fraction of SDG 92357050, the laboratory did not report any ICS AB standards on the ICP ICS Summary Form in the data package provided. Low concentrations of the ICS A interferents were observed in the associated samples; therefore, qualification of data was not warranted.

2. In the metals fraction of SDG 92357050, the date and time presented on the ICP ICS Summary Form for the second ICS A analyzed were incorrectly reported as 10/5/2017 at 2033. The correct date and time were 10/6/2017 at 0729. Upon Environmental Standards' request, the laboratory provided the revised summary form (see Section 6).

3. In the TOC fraction of both SDGs, the laboratory did not include the second and third pages of the initial calibration data summary in the data package provided. Upon Environmental Standards' request, the laboratory provided the missing pages (see Section 6).

4. In the TOC fraction of both SDGs, the laboratory did not include the signal raw data for all samples and QC in the data package provided; only concentrations were included. Consequently, the data reviewer was unable to confirm that the results for all samples and QC were quantitated correctly.

5. In the anions fraction of SDG 92357284, the laboratory did not include the correct sample data summary report that was applicable to the initial calibration analyzed on 8/2/17, and the samples analyzed on 9/29/17 and 9/30/17. Upon Environmental Standards' request, the laboratory provided the missing sample data summary report (see Section 6).

6. In the anions fraction of both SDGs, the laboratory did not include the area raw data for all samples and QC in the data package provided; only concentrations were included. Consequently, the data reviewer was unable to confirm that the results for all samples and QC were quantitated correctly.

Data Evaluation

With respect to data usability, the principal area of concern is quantitation below the sample-specific RL. Based on a rigorous review of the data provided, the following data qualifiers are offered. The following data usability issues represent an interpretation of the QC results obtained for the project samples. Quite often, data qualifications address issues relating to sample matrix problems. Similarly, the data validation guidelines routinely specify areas of the data that require qualification, yet the analytical method used for analysis may not require corrective action. Accordingly, the following data usability issues should not be construed as an indication of laboratory performance.

Inorganic Data Qualifier

- All results reported at concentrations less than the sample-specific RL (adjusted for dilution factors and/or sample volume) should be considered estimated and have been flagged "J" on the data tables.

A complete support documentation of this inorganic data QA review is presented in Section 4 of this report.

C. Conclusions

This QA review has identified several aspects of the data that warranted qualification. Overall, the analytical data are acceptable for use, provided the data users understand the qualifications and limitations of data use specified in this QA review. The Laboratory Case Narratives and Project Chain-of-Custody Records are presented in Section 5 of this report and the Project Correspondence is presented in Section 6.

Report Prepared by,

Caroline M. Rowshan
Caroline M. Rowshan
Quality Assurance Chemist

Report Reviewed by,

Ammie L. Martin
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Senior Quality Assurance Chemist/
Project Manager

Report Reviewed and Approved by,

Rock J. Vitale
Rock J. Vitale, CEAC
Technical Director of Chemistry/
Principal

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(610) 935-5577

Date: 11/16/17

SECTION 2

ANALYTICAL RESULTS

ORGANIC DATA QUALIFIER NOTES

U	This compound was not detected at or above the associated detection/reporting limit or this compound should be considered "not-detected" due to limitations identified during the QA review (data validation).
U*	This compound should be considered "not-detected" because it was detected in an associated blank at a similar level.
J	Quantitation is approximate due to limitations identified during the QA review (data validation).
UR	Unusable detection limit; compound may or may not be present in this sample.
R	Unusable result; compound may or may not be present in this sample.
UJ	This compound was not detected, but the detection/reporting limit is probably higher due to a low bias identified during the QA review.
N	This result should be considered a tentative qualitative identification.

INORGANIC DATA QUALIFIER NOTES

U	This compound was not detected at or above the associated detection/reporting limit or this compound should be considered "not-detected" due to limitations identified during the QA review (data validation).
U*	This analyte should be considered "not-detected" because it was detected in an associated blank at a similar level.
J	Quantitation is approximate due to limitations identified during the QA review (data validation).
UR	Unusable detection limit; analyte may or may not be present in this sample.
R	Unusable result; compound may or may not be present in this sample.
UJ	This compound was not detected, but the detection/reporting limit is probably higher due to a low bias identified during the QA review.
N	This result should be considered a tentative qualitative identification.

Kinder Morgan
SDGs: 92357050 and 92357284

Laboratory Sample Code	Field Sample ID	Analytical Method	CAS Number	Analyte	Result	Detect Flag	Laboratory Qualifier	Validator Qualifier	Interpreted Qualifier	MDL	RL	QL	Units
92357050001	MW-4S	EPA 6010	7439-89-6	Iron	50	N	U	U	U	25	50	50	ug/L
92357050001	MW-4S	EPA 6010	7439-96-5	Manganese	99.1	Y				2.5	5.0	5.0	ug/L
92357050001	MW-4S	EPA 8260B	71-43-2	Benzene	1	Y				0.25	1.0	1.0	ug/L
92357050001	MW-4S	EPA 9056A	16887-00-6	Chloride	11	Y				0.50	1.0	1.0	mg/L
92357050001	MW-4S	EPA 9056A	14797-55-8	Nitrate as N	0.1	N	U	U	U	0.050	0.10	0.10	mg/L
92357050001	MW-4S	EPA 9056A	14808-79-8	Sulfate	34.2	Y				0.50	1.0	1.0	mg/L
92357050001	MW-4S	SM 2320B	E1640192	Alkalinity, Total as CaCO3	16.1	Y				1.0	5.0	5.0	mg/L
92357050001	MW-4S	SM 5310B	7440-44-0	Total Organic Carbon	2.7	Y				0.50	1.0	1.0	mg/L
92357050002	MW-5S	EPA 6010	7439-89-6	Iron	2850	Y				25	50	50	ug/L
92357050002	MW-5S	EPA 6010	7439-96-5	Manganese	578	Y				2.5	5.0	5.0	ug/L
92357050002	MW-5S	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357050002	MW-5S	EPA 9056A	16887-00-6	Chloride	7.1	Y				0.50	1.0	1.0	mg/L
92357050002	MW-5S	EPA 9056A	14797-55-8	Nitrate as N	0.13	Y				0.050	0.10	0.10	mg/L
92357050002	MW-5S	EPA 9056A	14808-79-8	Sulfate	1	N	U	U	U	0.50	1.0	1.0	mg/L
92357050002	MW-5S	SM 2320B	E1640192	Alkalinity, Total as CaCO3	23.4	Y				1.0	5.0	5.0	mg/L
92357050002	MW-5S	SM 5310B	7440-44-0	Total Organic Carbon	0.9	Y	J	J	J	0.50	1.0	1.0	mg/L
92357050003	MW-6S	EPA 6010	7439-89-6	Iron	213	Y				25	50	50	ug/L
92357050003	MW-6S	EPA 6010	7439-96-5	Manganese	68.5	Y				2.5	5.0	5.0	ug/L
92357050003	MW-6S	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357050003	MW-6S	EPA 9056A	16887-00-6	Chloride	1.1	Y				0.50	1.0	1.0	mg/L
92357050003	MW-6S	EPA 9056A	14797-55-8	Nitrate as N	0.12	Y				0.050	0.10	0.10	mg/L
92357050003	MW-6S	EPA 9056A	14808-79-8	Sulfate	6	Y				0.50	1.0	1.0	mg/L
92357050003	MW-6S	SM 2320B	E1640192	Alkalinity, Total as CaCO3	3.1	Y	J	J	J	1.0	5.0	5.0	mg/L
92357050003	MW-6S	SM 5310B	7440-44-0	Total Organic Carbon	1.9	Y				0.50	1.0	1.0	mg/L
92357050004	MW-5D	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357050005	TW-8	EPA 8260B	71-43-2	Benzene	4.1	Y				0.25	1.0	1.0	ug/L
92357050006	TW-9	EPA 8260B	71-43-2	Benzene	0.37	Y	J	J	J	0.25	1.0	1.0	ug/L
92357050007	Duplicate	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357050008	Trip Blank	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357284001	TW-11	SM 5310B	7440-44-0	Total Organic Carbon	4.7	Y				0.50	1.0	1.0	mg/L
92357284001	TW-11	EPA 6010	7439-89-6	Iron	35.6	Y	J	J	J	25	50	50	ug/L
92357284001	TW-11	EPA 6010	7439-96-5	Manganese	342	Y				2.5	5.0	5.0	ug/L
92357284001	TW-11	EPA 8260B	71-43-2	Benzene	3	Y				0.25	1.0	1.0	ug/L
92357284001	TW-11	EPA 9056A	16887-00-6	Chloride	22.1	Y				0.50	1.0	1.0	mg/L
92357284001	TW-11	EPA 9056A	14797-55-8	Nitrate as N	0.1	N	U	U	U	0.050	0.10	0.10	mg/L
92357284001	TW-11	EPA 9056A	14808-79-8	Sulfate	2.9	Y				0.50	1.0	1.0	mg/L
92357284001	TW-11	SM 2320B	E1640192	Alkalinity, Total as CaCO3	21.1	Y				1.0	5.0	5.0	mg/L
92357284002	Equipment Blank	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L
92357284003	Trip Blank	EPA 8260B	71-43-2	Benzene	1	N	U	U	U	0.25	1.0	1.0	ug/L

SECTION 3

ORGANIC DATA SUPPORT DOCUMENTATION

A. SDG 92357050

ENVIRONMENTAL STANDARDS

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name:	Kinder Morgan -2017 Fountain Inn DV	Reviewed by:	CMR
Sample Collection Dates:	9/26 and 9/27/17	Approved by:	Alm
Job Number:	20177961.A000	Completion Date:	11/2017
Project Manager:	ALM		
Laboratory:	Pace Carolinas	Applicable Sample No's ( )	Refer to Table 1 in the Quality Assurance Review

Deliverable:			Sample No.	Lab Control No.
	CLP (Full)	( )	92357050	
	Level IV (Full)	(X)		
	Limited	( )		
	Other:			

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments Check (√) if Yes or Footnote Letter for Comments Below				
	8260					8260					8260				
Holding Times	√										√				
Blank Analysis: Target Cmpds	√										√				
Sys Montr Cmps/Surrogates	√										√				
Matrix Spike/Matrix Spike Duplicate	√										√				
Blank Spike	√										√				
Duplicate Analysis (X) Field ( ) Lab	√										√				
Detection Limit/Sensitivity	√										√				
Qualitative Identification: Target Cmpds	√										√				
Qualitative Identification: TICs															
DFTPP & BFB Mass Tuning	√										√				
GC Instrument Performance															
Initial Calibrations	√										√				
Continuing Calibrations	√										√				
Quantitation of Results	√										√				
DDT/Endrin Breakdown															
Surrogate Retention Time Shifts															
Internal Standards Performance	√										√				
Resolution Check Standards															
Analytical Sequence	√										√				
Florisil Cartridge & GPC Calibration															
GC Column Agreement															
Condition Upon Receipt	√										√				
Percent Solids															
Others:															

Comments:

ENVIRONMENTAL STANDARDS

BLANK ANALYSIS RESULTS FOR ORGANIC PARAMETERS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample ID	Contaminant	Concentration ug/L	Qualification limit	
						5×	10×
			All 92357050 blanks	None detected			

1 - V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: PFC

2 - MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: No blank qualification necessary

** Columns G and H contains formulas

ENVIRONMENTAL STANDARDS, INC.
EVALUATION OF DUPLICATE RESULTS

Effective Date: 11/23/2015
Revision: 0

Matrix: (•) Aqueous ( ) Non aq.
Reporting Level: ( ) MDL (•) QL
Units: µg/L

PRECISION OBJECTIVES:
If Both Results ≥ 5 × Their QL, RPD ≤: 20
If Either Result < 5 × Its QL, Dif. ≤: 1 **× Highest QL**

Sample ID: MW-5S **Duplicate Sample ID:** Duplicate

Analyte	Sample Concentration	Qual	QL	MDL	Duplicate Concentration	Qual	QL	MDL	Difference	RPD	Flag
None Detected				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			
				NA				NA			

NOTES:

Qual: Qualifier(s) based on evaluation(s) other than Total/ vs. Dissolved comparison, if applicable (J, U, U* or B)
RPD: Relative Percent Difference
QL: Quantitation Limit
MDL: Method Detection Limit
RL: Reporting Limit. RL = QL for QL reporting and MDL for MDL reporting
J: The analyte concentration should be considered estimated
U: The analyte was not detected in the sample at or above the RL indicated. The RL will be used for comparison purposes.
UJ: The analyte was not detected in the sample at or above the Reporting Limit Indicated. The RL is approximate.
R: The analyte was analyzed for and detected, but sample results are unreliable. The presence or absence of the analyte cannot be verified.
UR: The analyte was analyzed for and not detected, but the determination that the analyte was not present in the sample is unreliable. The presence or absence of the analyte cannot be verified.
U* The result was blank qualified. The RL will be used for comparison purposes.
NA: The MDL (for QL reporting), RPD or Difference is not applicable

Comments:

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(704)875-9092

ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Matrix: Water
% Moisture:
Acode: 8260 MSV Low Level SC
Prep/Method: EPA 8260

Sample: Trip Blank SC
Lab ID: 92357050008
Collected: 09/27/17 00:00
Received: 09/28/17 10:45
Analyzed: 09/30/17 08:16
Dilution Factor: 1

Units: ug/L

CAS No.	Parameters	Results	Report Limit	Qual
71-43-2	Benzene	ND	1.0	

ND - no Blank qual necessary

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(704)875-9092

SURROGATE RECOVERY SUMMARY

'roject: Fountain Inn Sampling
'ace Project No.: 92357050

QC Batch: 380073
QC Batch Method: EPA 8260

Analysis Method: EPA 8260

Lab ID	Client Sample ID	Type	Matrix	Dilution	Sur1 % Rec	Sur1 Qual	Sur2 % Rec	Sur2 Qual	Sur3 % Rec	Sur3 Qual	Sur4 % Rec	Sur4 Qual	Sur5 % Rec	Sur5 Qual	Sur6 % Rec	Sur6 Qual
106374		BLANK	Water	1	110		101		98							
2357050001	MW-4S		Water	1	114		100		101							
108365		DUP	Water	1	79		95		116							
106375		LCS	Water	1	110		107		100							
108364		MS	Water	1	99		104		99							
2357050005	TW-8		Water	1	115		102		103							
2357050008	Trip Blank		Water	1	110		96		99							
QC Limits:					70-130		70-130		70-130							

Sur 1: 1,2-Dichloroethane-d4 (S)
Sur 2: 4-Bromofluorobenzene (S)
Sur 3: Toluene-d8 (S)

* lab limits.

*noqual

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SURROGATE RECOVERY SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380076
QC Batch Method: EPA 8260

Analysis Method: EPA 8260

Lab ID	Client Sample ID	Type	Matrix	Dilution	Sur1 % Rec	Sur1 Qual	Sur2 % Rec	Sur2 Qual	Sur3 % Rec	Sur3 Qual	Sur4 % Rec	Sur4 Qual	Sur5 % Rec	Sur5 Qual	Sur6 % Rec	Sur6 Qual
106387		BLANK	Water	1	113		96		101							
108367		DUP	Water	1	85		102		105							
2357050002	MW-5S		Water	1	117		100		101							
106388		LCS	Water	1	108		103		99							
2357050003	MW-6S		Water	1	118		101		98							
108366		MS	Water	1	102		100		100							
2357050004	MW-5D		Water	1	116		101		97							
QC Limits:					70-130		70-130		70-130							

Sur 1: 1,2-Dichloroethane-d4 (S)
Sur 2: 4-Bromofluorobenzene (S)
Sur 3: Toluene-d8 (S)

* lab limits

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SURROGATE RECOVERY SUMMARY

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380337
QC Batch Method: EPA 8260

Analysis Method: EPA 8260

Lab ID	Client Sample ID	Type	Matrix	Dilution	Sur1 % Rec	Sur1 Qual	Sur2 % Rec	Sur2 Qual	Sur3 % Rec	Sur3 Qual	Sur4 % Rec	Sur4 Qual	Sur5 % Rec	Sur5 Qual	Sur6 % Rec	Sur6 Qual
07692		BLANK	Water	1	85		102		109							
07693		LCS	Water	1	103		105		95							
07694		MS	Water	1	100		102		98							
07695		MSD	Water	1	101		106		100							
357050006	TW-9	OQS	Water	1	81		105		109							
357050007	Duplicate		Water	1	78		101		111							
QC Limits:					70-130		70-130		70-130							

Sur 1: 1,2-Dichloroethane-d4 (S)
Sur 2: 4-Bromofluorobenzene (S)
Sur 3: Toluene-d8 (S)

Lab limits

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QC SAMPLE SUMMARY

lab limits

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380337
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
S Prepared:	**MS Analyzed:**	10/02/17 02:09		**MSD Prepared:**			**MSD Analyzed:**	10/02/17 02:27						
enzene	ug/L	110	114	3	70-130	30	20	20	1	1	0.37J	22.5	23.2	

Type	Sample	Matrix	Client Sample ID
MS	2107694	Water	
MSD	2107695	Water	
Sample	92357050006	Water	TW-9

* wl limits
* no qual

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QC SAMPLE SUMMARY

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380076
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
S Prepared:	**MS Analyzed:**	10/02/17 13:56		**MSD Prepared:**			**MSD Analyzed:**							
enzene	ug/L	113			70-130		20		1		ND	22.6		

Type	Sample	Matrix	Client Sample ID
MS	2108366	Water	
Sample	92357125003	Water	N/A

N/A
* batch QC
non-project

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QC SAMPLE SUMMARY

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380076 Analysis Method: EPA 8260
QC Batch: Method EPA 8260

Analyte	Units	Dup RPD	QC Limits MAX RPD Dup	Results Sample	Results Dup	Qual
enzene	ug/L		30	ND	ND	

Type	Sample	Matrix	Client Sample ID
DUP	2108367	Water	
Sample	92357125004	Water	N/A

N/A
* batch QC
non-project

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QC SAMPLE SUMMARY

'roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380073
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
S Prepared:	**MS Analyzed:**	10/02/17 13:38		**MSD Prepared:**			**MSD Analyzed:**							
enzene	ug/L	109			70-130		20		1		ND	21.9		

Type	Sample	Matrix	Client Sample ID
MS	2108364	Water	
Sample	92357132012	Water	N/A

N/A
* batch QC
non-project

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QC SAMPLE SUMMARY

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380073
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	Dup RPD	QC Limits MAX RPD Dup	Results Sample	Results Dup	Qual
enzene	ug/L		30	ND	ND	

Type	Sample	Matrix	Client Sample ID
DUP	2108365	Water	
Sample	92357125002	Water	N/A

N/A
* batch QC
non project

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QC SAMPLE SUMMARY

lab limits

'roject: Fountain Inn Sampling
'ace Project No.: 92357050

QC Batch: 380073
QC Batch: Method: EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
CS Prepared:		**LCS Analyzed:** 09/30/17 04:16			**LCSD Prepared:**			**LCSD Analyzed:**		
enzene	ug/L	90			70-130		50	45.1		

Type	Sample	Matrix
LCS	2106375	Water

* w/limits

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QC SAMPLE SUMMARY

lab limits

roject: Fountain Inn Sampling
ace Project No.: 92357050

QC Batch: 380337
QC Batch: Method: EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
CS Prepared:		**LCS Analyzed:** 10/01/17 15:53			**LCSD Prepared:**			**LCSD Analyzed:**		
enzene	ug/L	89			70-130		50	44.3		

Type	Sample	Matrix
LCS	2107693	Water

w/limits * noqual

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QC SAMPLE SUMMARY

'roject: Fountain Inn Sampling
'ace Project No.: 92357050

lab limits

QC Batch: 380076
QC Batch: Method: EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
CS Prepared:		LCS Analyzed: 09/30/17 04:33			LCSD Prepared:			LCSD Analyzed:		
enzene	ug/L	91			70-130		50	45.7		

Type	Sample	Matrix
LCS	2106388	Water

* w/ limits no qual

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QC SAMPLE SUMMARY

'roject: Fountain Inn Sampling
'ace Project No.: 92357050

QC Batch: 380073 Analysis Method: EPA 8260
QC Batch: Method: EPA 8260
Associated Lab Samples: 92357050001, 92357050005, 92357050008

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
1-43-2	Benzene	ND	ug/L	1.0	09/30/17 05:24	

Type	Sample	Matrix
BLANK	2106374	Water

* no MB contamination
∴ no qual

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QC SAMPLE SUMMARY

'roject: Fountain Inn Sampling
'ace Project No.: 92357050

QC Batch: 380076
QC Batch: Method: EPA 8260
Analysis Method: EPA 8260
Associated Lab Samples: 92357050002, 92357050003, 92357050004

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
1-43-2	Benzene	ND	ug/L	1.0	09/30/17 05:42	

Type	Sample	Matrix
BLANK	2106387	Water

* no MB contamination

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380337
QC Batch: Method: EPA 8260
Associated Lab Samples: 92357050006, 92357050007

Analysis Method: EPA 8260

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
1-43-2	Benzene	ND	ug/L	1.0	10/01/17 17:04	

Type	Sample	Matrix
BLANK	2107692	Water

* no MB contamination.

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Performance Check

Data File: \\Wt\chem\92msv5.i\091817C.b\09181733.D
Inj Date: 18-SEP-2017 17:01

Lab Sample ID: systemcheck
Client Sample ID: BFB
Spectrum: Avg. Scans 1340-1342 (7.89), Background Scan 1336
Performance Check: PASSED 19-Sep-2017 08:34

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	30.21
75	30.00 - 60.00% of mass 95	49.45
96	5.00 - 9.00% of mass 95	6.36
173	Less than 2.00% of mass 174	0.19 (0.21)
174	Greater than 50.00% of mass 95	89.52
175	5.00 - 9.00% of mass 174	6.64 (7.42)
176	95.00 - 101.00% of mass 174	85.30 (95.29)
177	5.00 - 9.00% of mass 176	5.65 (6.63)

assoc w/ samples 1-5, 8

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INITIAL CALIBRATION DATA

Start Cal Date : 18-SEP-2017 17:36
End Cal Date : 18-SEP-2017 19:19
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Last Edit : 19-Sep-2017 10:25 sbullis

Calibration File Names:
Level 02: all \\Wt\chem\92msv5.i\091817C.b\09181735B.D
Level 03: all \\Wt\chem\92msv5.i\091817C.b\09181736B.D
Level 04: all \\Wt\chem\92msv5.i\091817C.b\09181737B.D
Level 05: all \\Wt\chem\92msv5.i\091817C.b\09181738B.D
Level 06: all \\Wt\chem\92msv5.i\091817C.b\09181739B.D
Level 07: all \\Wt\chem\92msv5.i\091817C.b\09181740B.D
Level 08: all \\Wt\chem\92msv5.i\091817C.b\09181741B.D

benzene only

= RL

Compound (all.sb)	1.0000 Level 2	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
	200.0000 Level 8										
8 Dichlorodifluoromethane	3969	10266	29721	63138	186506	391658					
	767808						LINR	-0.00711	0.48874		0.99903
9 Chloromethane	0.75399	0.64244	0.90693	0.87417	0.84827	0.86341					
	0.87454						AVRG		0.82311		11.29443
10 Vinyl Chloride	3070	11588	32078	67097	188761	392619					
	876374						LINR	-0.03179	0.56114		0.99859
11 Bromomethane	0.13276	0.14835	0.16338	0.14680	0.16172	0.17946					
	0.15095						AVRG		0.15906		11.65019

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INITIAL CALIBRATION DATA

Start Cal Date : 18-SEP-2017 17:36
End Cal Date : 18-SEP-2017 19:19
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Last Edit : 19-Sep-2017 10:25 sbullis

70.05

≤15

Compound (all.sb)	1.0000 Level 2 / 200.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
47 tert-Butyl Formate	0.32325	0.36084	0.34508	0.35863	0.37919	0.38504					
	0.42013						AVRG		0.36734		8.44352
48 Benzene	0.83236	0.94392	0.81776	0.86630	0.85950	0.84454					
	0.83128						AVRG		0.85652		4.90067
49 Propionitrile	0.08942	0.10067	0.09251	0.08377	0.08388	0.08218					
	0.08537						AVRG		0.08826		7.43101
50 Methacrylonitrile	0.37925	0.43909	0.40657	0.39219	0.38399	0.37324					
	0.37756						AVRG		0.39313		5.88199
51 tert-Amylmethyl ether	0.64158	0.72648	0.68504	0.68281	0.68622	0.68039					
	0.68727						AVRG		0.68426		3.59669
52 1,2-Dichloroethane	0.81404	0.71547	0.62093	0.62780	0.60250	0.59638					
	0.61895						AVRG		0.65658		12.17238
53 Isobutanol	0.03315	0.03807	0.03509	0.03243	0.03426	0.03338					
	0.03698						AVRG		0.03476		6.00780

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INITIAL CALIBRATION DATA

Start Cal Date : 18-SEP-2017 17:36
End Cal Date : 18-SEP-2017 19:19
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Last Edit : 19-Sep-2017 10:25 sbullis

Compound (all.sb)	1.0000 Level 2 / 200.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
103 1,2-Dibromo-3-Chloropropane	0.22990	0.25542	0.22904	0.21221	0.22867	0.21804					
	0.21886						AVRG		0.22702		6.28543
104 Hexachloro-1,3-butadiene	0.34083	0.31205	0.24501	0.29255	0.30442	0.28426					
	0.26364						AVRG		0.29042		10.85477
105 1,2,4-Trichlorobenzene	0.74853	0.81074	0.69204	0.73730	0.73501	0.70038					
	0.66907						AVRG		0.72730		6.36318
106 Naphthalene	2.25106	2.01549	2.28743	2.32867	2.49244	2.28017					
	2.16537						AVRG		2.32580		5.17465
107 1,2,3-Trichlorobenzene	0.72292	0.75497	0.67899	0.68831	0.69195	0.64908					
	0.60265						AVRG		0.68413		7.18476
$ 5 1,2-Dichloroethane-d4 (S)	0.57598	0.57376	0.56952	0.56237	0.56398	0.57629					
	0.59788						AVRG		0.57454		2.03623
$ 6 Toluene-d8 (S)	1.04336	1.03871	1.03709	1.03193	1.06293	1.04130					
	1.05906						AVRG		1.04491		1.11089

Pace Analytical Services, Inc

INITIAL CALIBRATION DATA

Start Cal Date : 18-SEP-2017 17:36
End Cal Date : 18-SEP-2017 19:19
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Last Edit : 19-Sep-2017 10:25 sbullis

Compound (all.sp)	1.0000 Level 2 / 100.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or RSD
$ 7 4-Bromofluorobenzene (S)	1.14884	1.46616	1.46826	1.48947	1.52741	1.59394					
	1.62[illegible]						AVRG		1.51[illegible]		4.49[illegible]66

Pace Analytical Services, Inc

INITIAL CALIBRATION DATA

Start Cal Date : 18-SEP-2017 17:36
End Cal Date : 18-SEP-2017 19:19
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Last Edit : 19-Sep-2017 10:25 sbullis

Average %RSD Results.

Calculated Average %RSD = 6.84733
Maximum Average %RSD = 0.500e+000
* Failed Average %RSD Test.

Curve	Formula	Units
Averaged	Amt = Rsp/ml	Response
Linear	Amt = b + ml*Rsp	Amount

1ng @ 9/18/17 @ 19:53 ≤12 hrs

Pace Analytical Services, Inc.

RECOVERY REPORT

Benzyl only

Client Name:
Sample Matrix: Liquid
Lab Smp Id: icv
Level: LOW
Data Type: MS DATA
SpikeList File: ICV.spk
Sublist File: all.sub
Method File: \\Wt\chem\92msv5.i\091817C.b\8260WLL.m
Misc Info: ,icv

Client SDG: SDGa27970
Fraction: VOA

Operator: SWB
SampleType: ICV
Quant Type: ISTD

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 Dichlorodifluorome	50.0	42.6	85.25	70-130
9 Chloromethane	50.0	55.8	111.59	70-130
10 Vinyl Chloride	50.0	47.4	94.80	70-130
11 Bromomethane	50.0	53.9	107.89	70-130
12 Chloroethane	50.0	52.3	104.54	70-130
13 Trichlorofluoromet	50.0	47.1	94.15	70-130
14 Ethyl Ether	50.0	51.6	103.28	70-130
15 Ethanol	2000	2250	112.32	70-130
16 1,1-Dichloroethene	50.0	53.2	106.35	70-130
17 1,1,2-Trichlorotri	50.0	55.0	109.91	70-130
18 Carbon Disulfide	50.0	56.4	112.79	70-130
19 Iodomethane	100	83.2	83.18	70-130
20 Acrolein	250	260	104.08	70-130
21 Allyl chloride	50.0	53.0	105.97	70-130
22 Methylene Chloride	50.0	50.6	101.28	70-130
23 Acetone	100	108	108.22	70-130
24 Methyl Acetate	50.0	49.2	98.39	70-130
25 trans-1,2-Dichloro	50.0	52.8	105.61	70-130
26 Methyl-tert-butyl	50.0	49.4	98.88	70-130
27 n-Hexane	50.0	54.3	108.62	70-130
28 tert-Butyl Alcohol	500	453	90.54	70-130
29 Acetonitrile	500	484	96.71	70-130
30 Diisopropyl Ether	50.0	50.7	101.43	70-130
31 2-Chloro-1,3-Butad	50.0	52.4	104.89	70-130
32 1,1-Dichloroethane	50.0	50.2	100.43	70-130
33 Acrylonitrile	250	256	102.31	70-130
34 Ethyl-tert-butyl e	100	99.7	99.73	70-130
35 Vinyl Acetate	100	110	109.62	70-130
36 cis-1,2-Dichloroet	50.0	52.2	104.48	70-130
37 2,2-Dichloropropan	50.0	51.2	102.35	70-130
38 Bromochloromethane	50.0	49.1	98.24	70-130
39 Cyclohexane	50.0	61.5	123.10	70-130
40 Chloroform	50.0	48.7	97.32	70-130
41 Ethyl Acetate	100	98.2	98.22	70-130
42 Tetrahydrofuran	500	483	96.58	70-130
43 Carbon Tetrachlori	50.0	50.1	100.26	70-130
44 1,1,1-Trichloroeth	50.0	49.9	99.73	70-130
45 2-Butanone	100	96.0	95.98	70-130
46 1,1-Dichloropropen	50.0	52.7	105.45	70-130
47 tert-Butyl Formate	400	520	130.09*	70-130

80-120

SPIKE	COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
48	Benzene	50.0	49.5	99.00	70-130
49	Propionitrile	500	493	98.57	70-130
50	Methacrylonitrile	500	487	97.48	70-130
51	tert-Amylmethyl et	100	99.6	99.57	70-130
52	1,2-Dichloroethane	50.0	44.4	88.83	70-130
53	Isobutanol	1000	974	97.36	70-130
54	tert-Amyl Alcohol	1000	1010	101.31	70-130
55	Methylcyclohexane	50.0	56.6	113.18	70-130
56	Trichloroethene	50.0	48.9	97.75	70-130
57	Dibromomethane	50.0	47.0	94.10	70-130
58	1,2-Dichloropropan	50.0	50.3	100.62	70-130
59	Bromodichlorometha	50.0	46.8	93.53	70-130
60	Methyl methacrylat	50.0	46.8	93.61	70-130
61	1,4-Dioxane	1000	1370	137.46*	70-130
62	2-Chloroethyl Viny	100	107	107.24	70-130
63	cis-1,3-Dichloropr	50.0	51.0	102.00	70-130
64	Toluene	50.0	50.5	100.97	70-130
65	Tetrachloroethene	50.0	48.1	96.30	70-130
66	4-Methyl-2-Pentano	100	94.1	94.13	70-130
67	trans-1,3-Dichloro	50.0	48.1	96.13	70-130
68	1,1,2-Trichloroeth	50.0	46.2	92.40	70-130
69	Ethyl methacrylate	50.0	48.3	96.55	70-130
70	Dibromochlorometha	50.0	49.2	98.51	70-130
71	1,3-Dichloropropan	50.0	49.8	99.59	70-130
72	1,2-Dibromoethane	50.0	49.8	99.63	70-130
73	3,3-Dimethyl-1-but	1000	1060	106.26	70-130
74	2-Hexanone	100	96.7	96.73	70-130
75	Chlorobenzene	50.0	48.6	97.20	70-130
76	Ethylbenzene	50.0	51.4	102.88	70-130
77	1,1,1,2-Tetrachlor	50.0	47.2	94.38	70-130
78	m&p-Xylene	100	102	101.53	70-130
79	o-Xylene	50.0	51.2	102.32	70-130
80	Styrene	50.0	51.1	102.26	70-130
81	Bromoform	50.0	48.9	97.73	70-130
82	Isopropylbenzene (	50.0	50.5	100.93	70-130
83	cis 1,4-dichloro-2	50.0	50.3	100.56	70-130
84	Bromobenzene	50.0	49.4	98.75	70-130
85	n-Propylbenzene	50.0	50.9	101.85	70-130
86	1,1,2,2-Tetrachlor	50.0	46.3	92.59	70-130
87	2-Chlorotoluene	50.0	50.9	101.86	70-130
88	1,3,5-Trimethylben	50.0	52.8	105.57	70-130
89	1,2,3-Trichloropro	50.0	48.3	96.59	70-130
90	trans 1,4-Dichloro	50.0	73.2	146.40*	70-130
91	Cyclohexanone	2500	7560	302.39*	70-130
92	4-Chlorotoluene	50.0	50.8	101.54	70-130
93	tert-Butylbenzene	50.0	41.5	82.98	70-130
95	1,2,4-Trimethylben	50.0	51.9	103.85	70-130
96	sec-Butylbenzene	50.0	52.0	104.05	70-130
97	p-Isopropyltoluene	50.0	53.5	107.01	70-130
98	1,3-Dichlorobenzen	50.0	49.1	98.29	70-130
99	1,4-Dichlorobenzen	50.0	49.7	99.36	70-130
100	1,2,3-Trimethylben	50.0	49.3	98.63	70-130
101	n-Butylbenzene	50.0	52.8	105.56	70-130
102	1,2-Dichlorobenzen	50.0	48.5	96.98	70-130

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
103 1,2-Dibromo-3-Chlo	50.0	48.4	96.86	70-130
104 Hexachloro-1,3-but	50.0	51.8	103.52	70-130
105 1,2,4-Trichloroben	50.0	50.5	100.95	70-130
106 Naphthalene	50.0	51.5	103.07	70-130
107 1,2,3-Trichloroben	50.0	50.2	100.40	70-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 5 1,2-Dichloroethane	50.0	48.6	97.17	70-130
$ 6 Toluene-d8 (S)	50.0	49.9	99.74	70-130
$ 7 4-Bromofluorobenze	50.0	49.2	98.49	70-130

INSTRUMENT RUN LOG
Pace Analytical Services, Inc

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/09181732.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	9/18/17	16:44	SWB	
1/09181733.D	systemcheck	L/,systemcheck	DFB	1	< 2	DFB	9/18/17	17:01	SWB	
1/09181734.D	ical_1	L/,ical_1	CALIB_1	1	< 2	6200B	9/18/17	17:18	SWB	
1/09181735.D	ical_2	L/,ical_2	CALIB_2	1	< 2	6200B	9/18/17	17:36	SWB	
1/09181736.D	ical_3	L/,ical_3	CALIB_3	1	< 2	6200B	9/18/17	17:53	SWB	
1/09181737.D	ical_4	L/,ical_4	CALIB_4	1	< 2	6200B	9/18/17	18:10	SWB	
1/09181738.D	ical_5	L/,ical_5	CALIB_5	1	< 2	6200B	9/18/17	18:27	SWB	
1/09181739.D	ical_6	L/,ical_6	CALIB_6	1	< 2	6200B	9/18/17	18:44	SWB	
1/09181740.D	ical_7	L/,ical_7	CALIB_7	1	< 2	6200B	9/18/17	19:01	SWB	
1/09181741.D	ical_8	L/,ical_8	CALIB_8	1	< 2	6200B	9/18/17	19:19	SWB	
1/09181742.D	cu	L/,cu	SAMPLE	1	< 2	6200B	9/18/17	19:36	SWB	✓ 5.12 ms
1/09181743.D	icv	L/,icv	ICV	1	< 2	6200B	9/18/17	19:53	SWB	
1/09181744.D	2095774	L/,2095774	LCS	1	< 2	6200B	9/18/17	20:10	SWB	
1/09181745.D	cu	L/,cu	SAMPLE	1	< 2	6200B	9/18/17	20:27	SWB	
1/09181746.D	2095773	L/,2095773	SAMPLE	1	< 2	6200B	9/18/17	20:44	SWB	
1/09181747.D	92355142003	L/43145,92355142003	SAMPLE	1	< 2	6200B	9/18/17	21:02	SWB	
1/09181748.D	92355004001	L/43145,92355004001	SAMPLE	1	< 2	6200B	9/18/17	21:19	SWB	
1/09181749.D	92355444001	L/43145,92355444001	SAMPLE	1	< 2	6200B	9/18/17	21:36	SWB	
1/09181750.D	92355414001	L/43145,92355414001	SAMPLE	1	< 2	6200B	9/18/17	21:53	SWB	
1/09181751.D	92355415001	L/43145,92355415001	SAMPLE	1	< 2	6200B	9/18/17	22:11	SWB	
1/09181752.D	92355415002	L/43145,92355415002	SAMPLE	1	< 2	6200B	9/18/17	22:28	SWB	
1/09181753.D	92355415003	L/43145,92355415003	SAMPLE	1	< 2	6200B	9/18/17	22:45	SWB	
1/09181754.D	92355415004	L/43145,92355415004	SAMPLE	1	< 2	6200B	9/18/17	23:02	SWB	
1/09181755.D	92355415005	L/43145,92355415005	SAMPLE	1	< 2	6200B	9/18/17	23:19	SWB	
1/09181756.D	92355415006	L/43145,92355415006	SAMPLE	1	< 2	6200B	9/18/17	23:36	SWB	
1/09181757.D	92355415007	L/43145,92355415007	SAMPLE	1	< 2	6200B	9/18/17	23:53	SWB	
1/09181758.D	92355415009	L/43145,92355415009	SAMPLE	1	< 2	6200B	9/19/17	00:11	SWB	
1/09181759.D	92355415010	L/43145,92355415010	SAMPLE	1	< 2	6200B	9/19/17	00:28	SWB	
1/09181760.D	92355415011	L/43145,92355415011	SAMPLE	1	< 2	6200B	9/19/17	00:45	SWB	
1/09181761.D	92355415012	L/43145,92355415012	SAMPLE	1	< 2	6200B	9/19/17	01:02	SWB	
1/09181762.D	92355415013	L/43145,92355415013	SAMPLE	1	< 2	6200B	9/19/17	01:19	SWB	
1/09181763.D	92355415015	L/43145,92355415015	SAMPLE	1	< 2	6200B	9/19/17	01:36	SWB	
1/09181764.D	92355415016	L/43145,92355415016	SAMPLE	1	< 2	6200B	9/19/17	01:54	SWB	
1/09181765.D	92355415017	L/43145,92355415017	SAMPLE	1	< 2	6200B	9/19/17	02:11	SWB	

Check Maintenance Items Performed:

___ Changed septum ___ Clipped column ___ Changed column (lot #_____)
___ Cleaned liner ___ Changed trap (lot #_____) ___ Other minor parts replaced _____
___ Replaced/Cleaned gold seal ___ Cleaned MS source ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv5.i\091817C.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 09:30 09/19/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1\091817C6.D	92355241001	L/43145,92355241001	SAMPLE	50		< 2 6200B		9/19/17	02:29	SWB
1\091817C7.D	2095575	L/,2095575	SAMPLE	50		< 2 6200B	9/19/17	02:45	SWB	
1\091817C8.D	2095576	L/,2095576	SAMPLE	50		< 2 6200B	9/19/17	03:02	SWB	

File Path 1: \\Wt\chem\92msv5.i\091817C.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 09:30 09/19/2017

Performance Check

Data File: \\Wt\chem\92msv5.i\092917C.b\09291766b.D
Inj Date: 30-SEP-2017 03:59

Lab Sample ID: bfb
Client Sample ID: BFB
Spectrum: Avg. Scans 1340-1342 (7.89), Background Scan 1336
Performance Check: PASSED 30-Sep-2017 09:17

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	32.88
75	30.00 - 60.00% of mass 95	54.38
96	5.00 - 9.00% of mass 95	6.88
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	92.50
175	5.00 - 9.00% of mass 174	7.13 (7.71)
176	95.00 - 101.00% of mass 174	89.29 (96.53)
177	5.00 - 9.00% of mass 176	5.71 (6.39)

Data File: \\Wt\chem\92msv5.i\092917C.b\09291766.D
Report Date: 30-Sep-2017 09:16

Pace Analytical Services, Inc.

Benzene only

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i
Lab File ID: 09291766.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv5.i\092917C.b\8260WLL.m

Injection Date: 30-SEP-2017 03:59
Init. Cal. Date(s): 18-SEP-2017 18-SEP-2017
Init. Cal. Times: 17:36 19:19
Quant Type: ISTD

	COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS	
$	5 1,2-Dichloroethane-d4 (S)	0.57454	0.63055	0.63055	0.010	9.74894	20.00000	Aver		
$	6 Toluene-d8 (S)	1.04491	1.05201	1.05201	0.010	0.67968	20.00000	Aver		
$	7 4-Bromofluorobenzene (S)	1.51688	1.60128	1.60128	0.010	5.56381	20.00000	Aver		
	8 Dichlorodifluoromethane	50.00000	45.74310	0.44917	0.010	-8.51379	20.00000	Line		
	9 Chloromethane	0.82311	0.57488	0.57488	0.100	-30.15695	20.00000	Aver		<-
	10 Vinyl Chloride	50.00000	40.20011	0.41937	0.010	-19.59978	20.00000	Line		
	11 Bromomethane	0.15906	0.05192	0.05192	0.010	-67.42177	20.00000	Aver		<-
	12 Chloroethane	0.33952	0.32887	0.32887	0.010	-4.04681	20.00000	Aver		
	13 Trichlorofluoromethane	50.00000	54.95904	0.65207	0.010	9.91807	20.00000	Line		
	14 Ethyl Ether	0.36610	0.35305	0.35305	0.010	-3.56407	20.00000	Aver		
	15 Ethanol	0.00493	0.00458	0.00458	0.010	-7.04969	20.00000	Aver	(Q)	<-
	16 1,1-Dichloroethene	0.56842	0.59412	0.59412	0.010	4.52169	20.00000	Aver		
	17 1,1,2-Trichlorotrifluoroeth	0.25957	0.27553	0.27553	0.010	6.15210	20.00000	Aver		
	18 Carbon Disulfide	0.66319	0.58315	0.58315	0.010	-12.07000	20.00000	Aver		
	19 Iodomethane	100	50.27426	0.14052	0.010	-49.72574	20.00000	Line		<-
	20 Acrolein	0.08499	0.05010	0.05010	0.010	-41.04802	20.00000	Aver		<-
	21 Allyl chloride	0.14228	0.12036	0.12036	0.010	-15.40772	20.00000	Aver	(Q)	
	22 Methylene Chloride	50.00000	47.26445	0.48702	0.010	-5.47111	20.00000	Line	(Q)	
	23 Acetone	0.18276	0.17100	0.17100	0.010	-6.43522	20.00000	Aver		
	24 Methyl Acetate	0.05737	0.04887	0.04887	0.010	-14.82309	20.00000	Aver		
	25 trans-1,2-Dichloroethene	0.58824	0.55001	0.55001	0.010	-6.49923	20.00000	Aver		
	26 Methyl-tert-butyl Ether	0.99252	0.93777	0.93777	0.010	-5.51631	20.00000	Aver		
	27 n-Hexane	0.78935	0.72365	0.72365	0.010	-8.33335	20.00000	Aver		
	28 tert-Butyl Alcohol	0.08739	0.07487	0.07487	0.010	-14.32361	20.00000	Aver		
	29 Acetonitrile	0.06138	0.05171	0.05171	0.010	-15.76412	20.00000	Aver		
	30 Diisopropyl Ether	1.90718	1.74770	1.74770	0.010	-8.36136	20.00000	Aver		
	31 2-Chloro-1,3-Butadiene	0.81081	0.84965	0.84965	0.010	4.79026	20.00000	Aver		
	32 1,1-Dichloroethane	0.70846	0.64586	0.64586	0.100	-8.83633	20.00000	Aver		
	33 Acrylonitrile	0.23055	0.20125	0.20125	0.010	-12.70975	20.00000	Aver		
	34 Ethyl-tert-butyl ether	1.50739	1.46791	1.46791	0.010	-2.61917	20.00000	Aver		
	35 Vinyl Acetate	1.41674	1.46141	1.46141	0.010	3.18947	20.00000	Aver		
	36 cis-1,2-Dichloroethene	0.59933	0.56740	0.56740	0.010	-5.32778	20.00000	Aver		
	37 2,2-Dichloropropane	0.50397	0.44337	0.44337	0.010	-12.02450	20.00000	Aver		
	38 Bromochloromethane	0.25070	0.22676	0.22676	0.010	-9.55142	20.00000	Aver		
	39 Cyclohexane	0.65164	0.70274	0.70274	0.010	7.84177	20.00000	Aver		
	40 Chloroform	0.61992	0.57677	0.57677	0.010	-6.96174	20.00000	Aver		
	41 Ethyl Acetate	0.92711	0.85628	0.85628	0.010	-7.63914	20.00000	Aver		
	42 Tetrahydrofuran	0.23397	0.20765	0.20765	0.010	-11.25023	20.00000	Aver		
	43 Carbon Tetrachloride	0.38454	0.45729	0.45729	0.010	18.92102	20.00000	Aver		
	44 1,1,1-Trichloroethane	0.57583	0.62259	0.62259	0.010	8.12089	20.00000	Aver		
	45 2-Butanone	0.33321	0.28723	0.28723	0.010	-13.79794	20.00000	Aver		
	46 1,1-Dichloropropene	0.40503	0.39679	0.39679	0.010	-2.03875	20.00000	Aver		

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i
Lab File ID: 09291766.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv5.i\092917C.b\8260WLL.m

Injection Date: 30-SEP-2017 03:59
Init. Cal. Date(s): 18-SEP-2017 18-SEP-2017
Init. Cal. Times: 17:36 19:19
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF50	CCAL RF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS	
47 tert-Butyl Formate	0.36734	0.47337	0.47337	0.010	28.86601	20.00000	Aver		<-
48 Benzene	0.85652	0.79761	0.79761	0.010	-6.87719	20.00000	Aver		
49 Propionitrile	0.08826	0.08037	0.08037	0.010	-8.93689	20.00000	Aver		
50 Methacrylonitrile	0.39313	0.36650	0.36650	0.010	-6.77372	20.00000	Aver		
51 tert-Amylmethyl ether	0.68426	0.71995	0.71995	0.010	5.21647	20.00000	Aver		
52 1,2-Dichloroethane	0.65659	0.65938	0.65938	0.010	0.42544	20.00000	Aver		
53 Isobutanol	0.03476	0.03035	0.03035	0.010	-12.70199	20.00000	Aver	(Q)	
54 tert-Amyl Alcohol	0.04326	0.04523	0.04523	0.010	3.13628	20.00000	Aver		
55 Methylcyclohexane	0.32232	0.38358	0.38358	0.010	19.00565	20.00000	Aver		
56 Trichloroethene	0.29296	0.29866	0.29866	0.010	1.94310	20.00000	Aver		
57 Dibromomethane	0.19371	0.20087	0.20087	0.010	3.69893	20.00000	Aver		
58 1,2-Dichloropropane	0.29514	0.27770	0.27770	0.010	-5.90786	20.00000	Aver	(Q)	
59 Bromodichloromethane	0.35133	0.36851	0.36851	0.010	4.88936	20.00000	Aver		
60 Methyl methacrylate	0.42574	0.45097	0.45097	0.010	5.92720	20.00000	Aver		
61 1,4-Dioxane	0.00142	0.00143	0.00143	0.010	0.98098	20.00000	Aver		<-
62 2-Chloroethyl Vinyl Ether	0.18058	0.18548	0.18548	0.010	2.71252	20.00000	Aver		
63 cis-1,3-Dichloropropene	0.37973	0.35982	0.35982	0.010	-5.25828	20.00000	Aver		
64 Toluene	1.02567	0.98750	0.98750	0.010	-3.72177	20.00000	Aver		
65 Tetrachloroethene	1.08532	1.17714	1.17714	0.010	8.45903	20.00000	Aver		
66 4-Methyl-2-Pentanone	0.52162	0.52345	0.52345	0.010	0.34959	20.00000	Aver		
67 trans-1,3-Dichloropropene	0.37296	0.36954	0.36954	0.010	-0.91625	20.00000	Aver		
68 1,1,2-Trichloroethane	0.23306	0.22637	0.22637	0.010	-2.87197	20.00000	Aver		
69 Ethyl methacrylate	1.58841	1.66011	1.66011	0.010	3.99025	20.00000	Aver		
70 Dibromochloromethane	1.14716	1.13668	1.13668	0.010	-0.91324	20.00000	Aver		
71 1,3-Dichloropropane	1.38372	1.29099	1.29099	0.010	-6.70185	20.00000	Aver		
72 1,2-Dibromoethane	0.92934	0.91721	0.91721	0.010	-1.19687	20.00000	Aver		
73 3,3-Dimethyl-1-butanol	0.08429	0.08173	0.08173	0.010	-3.03859	20.00000	Aver		
74 2-Hexanone	1.82433	1.81517	1.81517	0.010	-0.50227	20.00000	Aver		
75 Chlorobenzene	2.72301	2.62997	2.62997	0.300	-3.41679	20.00000	Aver		
76 Ethylbenzene	4.17469	4.19877	4.19877	0.010	0.57921	20.00000	Aver		
77 1,1,1,2-Tetrachloroethane	1.10085	1.14785	1.14785	0.300	4.26969	20.00000	Aver		
78 m&p-Xylene	3.23688	3.35134	3.35134	0.010	3.72938	20.00000	Aver		
79 o-Xylene	1.58867	1.61824	1.61824	0.010	1.86124	20.00000	Aver		
80 Styrene	2.78162	2.78497	2.78497	0.010	0.12039	20.00000	Aver		
81 Bromoform	0.75773	0.68765	0.68765	0.100	-9.24949	20.00000	Aver		
82 Isopropylbenzene (Cumene)	3.85604	4.00283	4.00283	0.010	3.80656	20.00000	Aver		
83 cis 1,4-dichloro-2-butene	1.82791	1.77668	1.77668	0.010	-2.80257	20.00000	Aver	(Q)	
84 Bromobenzene	0.68541	0.64133	0.64133	0.010	-6.43178	20.00000	Aver		
85 n-Propylbenzene	2.33253	2.19264	2.19264	0.010	-5.99959	20.00000	Aver		
86 1,1,2,2-Tetrachloroethane	1.26011	1.11822	1.11822	0.300	-11.26067	20.00000	Aver		
87 2-Chlorotoluene	1.61118	1.53018	1.53018	0.010	-5.02759	20.00000	Aver		
88 1,3,5-Trimethylbenzene	1.78434	1.77381	1.77381	0.010	-0.59025	20.00000	Aver		
89 1,2,3-Trichloropropane	1.03113	0.99401	0.99401	0.010	-3.59986	20.00000	Aver		

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i Injection Date: 30-SEP-2017 03:59
Lab File ID: 09291766.D Init. Cal. Date(s): 18-SEP-2017 18-SEP-2017
Analysis Type: WATER Init. Cal. Times: 17:36 19:19
Lab Sample ID: ccal 6 Quant Type: ISTD
Method: \\Wt\chem\92msv5.i\092917C.b\8260WLL.m

COMPOUND	RRF / AMOUNT	RF50	TOTAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS	
90 trans 1,4-Dichloro-2-butene	0.70193	0.74643	0.74643	0.010	6.34037	20.00000	Aver	(Q)	
91 Cyclohexanone	0.08600	0.16818	0.16818	0.010	95.56224	20.00000	Aver		<-
92 4-Chlorotoluene	1.68899	1.61343	1.61343	0.010	-4.47393	20.00000	Aver		
93 tert-Butylbenzene	1.81543	1.77428	1.77428	0.010	-2.26762	20.00000	Aver		
94 Pentachloroethane	0.44108	0.41311	0.41311	0.010	-6.34174	20.00000	Aver		
95 1,2,4-Trimethylbenzene	1.94582	1.92577	1.92577	0.010	-1.03078	20.00000	Aver		
96 sec-Butylbenzene	1.94469	1.92627	1.92627	0.010	-0.94726	20.00000	Aver		
97 p-Isopropyltoluene	1.80846	1.83199	1.83199	0.010	1.46956	20.00000	Aver		
98 1,3-Dichlorobenzene	1.27871	1.20580	1.20580	0.010	-5.13776	20.00000	Aver		
99 1,4-Dichlorobenzene	1.32891	1.25191	1.25191	0.010	-5.58014	20.00000	Aver		
100 1,2,3-Trimethylbenzene	1.14746	1.13770	1.13770	0.010	-0.85010	20.00000	Aver		
101 n-Butylbenzene	1.44469	1.41850	1.41850	0.010	-1.82618	20.00000	Aver		
102 1,2-Dichlorobenzene	1.28938	1.21307	1.21307	0.010	-5.91878	20.00000	Aver		
103 1,2-Dibromo-3-Chloropropane	0.22702	0.21142	0.21142	0.010	-6.87266	20.00000	Aver		
104 Hexachloro-1,3-butadiene	0.29043	0.29757	0.29757	0.010	2.43550	20.00000	Aver		
105 1,2,4-Trichlorobenzene	0.72730	0.69496	0.69496	0.010	-4.44575	20.00000	Aver		
106 Naphthalene	2.32590	2.21892	2.21892	0.010	-4.59544	20.00000	Aver		
107 1,2,3-Trichlorobenzene	0.69414	0.65509	0.65509	0.010	-4.24610	20.00000	Aver		

QC Flag Legend

Q - Qualifier signal failed the ratio test.

Average %D / Drift Results.

Calculated Average %D/Drift = 9.68609
Maximum Average %D/Drift = 0.00E+00
* Failed Average %D/Drift Test.

Pace Analytical Services, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: 92msv5.i
Lab File ID: 092917066.D
Lab Smp Id: ccal_6
Analysis Type: VOA
Quant Type: ISTD
Operator: CAH
Method File: \\Wt\chem\92msv5.i\092917C.b\8260WLL.m
Misc Info: ,ccal_6

Calibration Date: 30-SEP-2017
Calibration Time: 03:59

Level: LOW
Sample Type: WATER

Test Mode:
Use Last Continuing Calibrator.
If Continuing Cal. use Initial Cal. Level 6

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	369848	184924	739696	269865	-27.03
2 1,4-difluorobenze	490219	245110	980438	337315	-31.19
3 Chlorobenzene-d5	131599	65800	263198	93032	-29.31
4 1,4-Dichlorobenze	239316	119658	478632	181928	-23.98

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	4.00	3.50	4.50	4.00	0.01
2 1,4-difluorobenze	4.57	4.07	5.07	4.57	0.01
3 Chlorobenzene-d5	7.16	6.66	7.66	7.16	-0.07
4 1,4-Dichlorobenze	8.46	7.96	8.96	8.46	-0.06

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

See RW

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 092917066CCAL Date Analyzed: 09/30/17

Instrument ID: 92MSV5 Time Analyzed: 0359

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 (DFB) AREA #	RT
	12 HOUR STD	93032	7.16	181928	8.46	337315	4.57
	UPPER LIMIT	186064	7.66	363856	8.96	674630	5.07
	LOWER LIMIT	46516	6.66	90964	7.96	168658	4.07
	EPA SAMPLE NO.						
01	LCS	96520	7.16	190014	8.46	358185	4.57
02	LCS	97752	7.16	189583	8.46	358722	4.57
03	BLANK	88844	7.16	166428	8.46	330257	4.57
04	BLANK	90290	7.16	159433	8.46	324159	4.57
05	MW-4S	84754	7.16	154295	8.46	299323	4.57
06	TW-8	84811	7.16	155603	8.46	302144	4.57
07	MW-5S	76889	7.16	142459	8.46	282515	4.57
08	MW-6S	80859	7.16	148980	8.46	295663	4.57
09	MW-5D	78426	7.16	142151	8.46	292541	4.57
10	Trip Blank					318055	4.57
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA

1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 092917066 Date Analyzed: 09/30/17

Instrument ID: 92MSV5 Time Analyzed: 0359

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(CBZ) AREA #	RT	IS2(DCB) AREA #	RT	IS3(DFB) AREA #	RT
	12 HOUR STD	93032	7.16	181928	8.46	337315	4.57
	UPPER LIMIT	186064	7.66	363856	8.96	674630	5.07
	LOWER LIMIT	46516	6.66	90964	7.96	168658	4.07
	EPA SAMPLE NO.						
01	LCS	96520	7.16	190014	8.46	358185	4.57
02	LCS	97752	7.16	189583	8.46	358722	4.57
03	BLANK	88844	7.16	166428	8.46	330257	4.57
04	BLANK	90290	7.16	159433	8.46	324159	4.57
05	TRIP BLANK	87717	7.16	154574	8.46	318055	4.57
06	MW-4S	84754	7.16	154295	8.46	299323	4.57
07	TW-8	84811	7.16	155603	8.46	302144	4.57
08	MW-5S	76889	7.16	142459	8.46	282515	4.57
09	MW-6S	80859	7.16	148980	8.46	295663	4.57
10	MW-5D	78426	7.16	142151	8.46	292541	4.57
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA

1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract: See Rev

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 092917066CCAL Date Analyzed: 09/30/17

Instrument ID: 92MSV5 Time Analyzed: 0359

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	269865	4.00				
	UPPER LIMIT	539730	4.50				
	LOWER LIMIT	134933	3.50				
	EPA SAMPLE NO.						
01	LCS	279265	3.99				
02	LCS	282907	4.00				
03	BLANK	259494	4.00				
04	BLANK	256297	3.99				
05	MW-4S	241753	3.99				
06	TW-8	242640	3.99				
07	MW-5S	223939	3.99				
08	MW-6S	233475	3.99				
09	MW-5D	233467	3.99				
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 092917066 Date Analyzed: 09/30/17

Instrument ID: 92MSV5 Time Analyzed: 0359

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	269865	4.00				
	UPPER LIMIT	539730	4.50				
	LOWER LIMIT	134933	3.50				
	EPA SAMPLE NO.						
01	LCS	279265	3.99				
02	LCS	282907	4.00				
03	BLANK	259494	4.00				
04	BLANK	256297	3.99				
05	TRIP BLANK	256729	3.99				
06	MW-4S	241753	3.99				
07	TW-8	242640	3.99				
08	MW-5S	223939	3.99				
09	MW-6S	233475	3.99				
10	MW-5D	233467	3.99				
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA

1/87 Rev.

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	µS	Method	Date	Time	Oper	Comments
1:092917046.D bfb		L/,bfb	BFB	1	< 2	BFB	9/30/17	03:42	CAH	
1:092917066.D coal_6		L/,coal_6	8260LIB_6	1	< 2	8260WLL	9/30/17	03:59	CAH	
1:092917066LCS.D bfb		L/,bfb	BFB	1	< 2	BFB	9/30/17	03:58	CAH	
1:092917066MSD.D coal_6		L/,coal_6	8260LIB_6	1	< 2	8260WLL	9/30/17	03:59	CAH	
1:092917067.D lcs		L/,lcs	SAMPLE	1	< 2	8260WLL	9/30/17	04:16	CAH	
1:092917068.D lcs		L/,lcs	SAMPLE	1	< 2	8260WLL	9/30/17	04:33	CAH	
1:092917069.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	9/30/17	04:50	CAH	
1:092917070.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	9/30/17	05:07	CAH	
1:092917071.D mb		L/,mb	SAMPLE	1	< 2	8260WLL	9/30/17	05:24	CAH	
1:092917072.D mb		L/,mb	SAMPLE	1	< 2	8260WLL	9/30/17	05:42	CAH	
1:092917073.D 92356893017		L/43334,92356893017	SAMPLE	1	< 2	8260WLL	9/30/17	06:59	CAH	
1:092917074.D 92356893018		L/43334,92356893018	SAMPLE	1	< 2	8260WLL	9/30/17	06:16	CAH	
1:092917075.D 92357170016		L/43334,92357170016	SAMPLE	1	< 2	8260WLL	9/30/17	06:33	CAH	
1:092917076.D 92357131014		L/43334,92357131014	SAMPLE	1	< 2	8260WLL	9/30/17	06:50	CAH	
1:092917077.D 92357132015		L/43334,92357132015	SAMPLE	1	< 2	8260WLL	9/30/17	07:08	CAH	
1:092917078.D 92356929004		L/43334,92356929004	SAMPLE	1	< 2	8260WLL	9/30/17	07:25	CAH	
1:092917079.D 92356929005		L/43334,92356929005	SAMPLE	1	< 2	8260WLL	9/30/17	07:42	CAH	
1:092917080.D 92356933006		L/43334,92356933006	SAMPLE	1	< 2	8260WLL	9/30/17	07:59	CAH	
1:092917081.D 92357050008		L/43334,92357050008	SAMPLE	1	< 2	8260WLL	9/30/17	08:16	CAH	
1:092917082.D 92356895004		L/43334,92356895004	SAMPLE	1	< 2	8260WLL	9/30/17	08:33	CAH	
1:092917083.D 92356933004		L/43334,92356933004	SAMPLE	1	< 2	8260WLL	9/30/17	08:51	CAH	
1:092917084.D 92357132001		L/43334,92357132001	SAMPLE	1	< 2	8260WLL	9/30/17	09:08	CAH	
1:092917086.D 92357132006		L/43334,92357132006	SAMPLE	1	< 2	8260WLL	9/30/17	09:25	CAH	
1:092917086.D 92357132009		L/43334,92357132009	SAMPLE	1	< 2	8260WLL	9/30/17	09:42	CAH	
1:092917087.D 92357132011		L/43334,92357132011	SAMPLE	1	< 2	8260WLL	9/30/17	09:59	CAH	
1:092917088.D 92357132012		L/43334,92357132012	SAMPLE	1	< 2	8260WLL	9/30/17	10:16	CAH	
1:092917089.D 92357132013		L/43334,92357132013	SAMPLE	1	< 2	8260WLL	9/30/17	10:34	CAH	
1:092917090.D 92357050001		L/43334,92357050001	SAMPLE	1	< 2	8260WLL	9/30/17	10:51	CAH	
1:092917091.D 92357050005		L/43334,92357050005	SAMPLE	1	< 2	8260WLL	9/30/17	11:08	CAH	512 hrs
1:092917092.D 92357125002		L/43335,92357125002	SAMPLE	1	< 2	8260WLL	9/30/17	11:25	CAH	
1:092917093.D 92357125003		L/43335,92357125003	SAMPLE	1	< 2	8260WLL	9/30/17	11:42	CAH	
1:092917094.D 92357125004		L/43335,92357125004	SAMPLE	1	< 2	8260WLL	9/30/17	12:00	CAH	
1:092917095.D 92357125005		L/43335,92357125005	SAMPLE	1	< 2	8260WLL	9/30/17	12:17	CAH	
1:092917096.D 92357125006		L/43335,92357125006	SAMPLE	1	< 2	8260WLL	9/30/17	12:34	CAH	

Check Maintenance Items Performed:

___ Changed septum
___ Cleaned liner
___ Replaced/Cleaned gold seal
___ Clipped column
___ Changed trap (lot #_____)
___ Cleaned MS source
___ Changed column (lot #_____)
___ Other minor parts replaced _____
___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv5.i\092917C.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 13:41 10/02/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/092917097.D	92356933003	L/43335,92356933003	SAMPLE	1	< 2	8260WLL	9/30/17	12:51	CAH	
1/092917098.D	92357050002	L/43335,92357050002	SAMPLE	1	< 2	8260WLL	9/30/17	13:08	CAH	
1/092917099.D	92357050003	L/43335,92357050003	SAMPLE	1	< 2	8260WLL	9/30/17	13:25	CAH	5/12 HS
1/092917100.D	92357050004	L/43335,92357050004	SAMPLE	1	< 2	8260WLL	9/30/17	13:42	CAH	
1/092917101.D	92356929001	L/43335,92356929001	SAMPLE	1	< 2	8260WLL	9/30/17	13:59	CAH	
1/092917102.D	92356933005	L/43335,92356933005	SAMPLE	1	< 2	8260WLL	9/30/17	14:17	CAH	

File Path 1: \\Wt\chem\92msv5.i\092917C.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 13:41 10/02/2017

Performance Check

Data File: \\Wt\chem\92msv1.i\092917A.b\09291713.D
Inj Date: 29-SEP-2017 14:32

Lab Sample ID: ical_1
Client Sample ID: BFB
Spectrum: Avg. Scans 1160-1162 (7.89), Background Scan 1156
Performance Check: PASSED 29-Sep-2017 18:10

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	24.14
75	30.00 - 60.00% of mass 95	48.06
96	5.00 - 9.00% of mass 95	6.10
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	89.51
175	5.00 - 9.00% of mass 174	6.79 (7.58)
176	95.00 - 101.00% of mass 174	86.00 (96.08)
177	5.00 - 9.00% of mass 176	5.66 (6.58)

assoc w/ _ 6,7

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 29-SEP-2017 14:50
End Cal Date : 29-SEP-2017 16:35
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv1.i\092917A.b\8260WLL.m
Last Edit : 30-Sep-2017 12:57 zosborne

Benzene only

Calibration File Names:
Level 02: all \\Wt\chem\92msv1.i\092917A.b\09291714.D
Level 03: all \\Wt\chem\92msv1.i\092917A.b\09291715.D
Level 04: all \\Wt\chem\92msv1.i\092917A.b\09291716.D
Level 05: all \\Wt\chem\92msv1.i\092917A.b\09291717.D
Level 06: all \\Wt\chem\92msv1.i\092917A.b\09291718.D
Level 07: all \\Wt\chem\92msv1.i\092917A.b\09291719.D
Level 08: all \\Wt\chem\92msv1.i\092917A.b\09291720.D

=RL

Compound (all.sp)	1.0000 Level 2 / 200.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
8 Dichlorodifluoromethane	0.70415	0.68259	0.69839	0.66259	0.65156	0.58717					
	0.57355						AVRG		0.65143		7.99501
9 Chloromethane	1.10530	1.04909	1.14744	1.13610	1.05081	0.98498					
	0.96698						AVRG		1.09153		9.05773
10 Vinyl Chloride	0.85377	0.87568	0.84563	0.86297	0.82772	0.75837					
	0.75649						AVRG		0.82623		5.95529
11 Bromomethane	0.34465	0.28092	0.27566	0.25800	0.26746	0.27157					
	0.27699						AVRG		0.28218		10.11383

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 29-SEP-2017 14:50
End Cal Date : 29-SEP-2017 16:35
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv1.i\092917A.b\8260WLL.m
Last Edit : 30-Sep-2017 12:57 zosborne

70.05

≤15

Compound (all.sb)	1.0000 Level 2 / 100.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
47 tert-Butyl Formate	+++++ / 5761469	78236	164611	387981	1207853	2718415	LINR	-0.42590	0.77098		0.99978
48 Benzene	1.07624 / 1.18467	1.22330	1.22524	1.23293	1.29936	1.22665	AVRG		1.[illegible]977		5.61934
49 Propionitrile	0.10147 / 0.13150	0.11141	0.10882	0.10164	0.11398	0.11705	AVRG		0.11082		6.77514
50 Methacrylonitrile	13016 / 4705207	72507	141213	318734	994053	2234943	LINR	-0.24888	0.45517		0.99956
51 tert-Amylmethyl ether	0.64567 / 0.80921	0.70048	0.73189	0.71439	0.77670	0.80631	AVRG		0.74066		8.12189
52 1,2-Dichloroethane	0.72278 / 0.76160	0.74789	0.72803	0.75874	0.75687	0.76394	AVRG		0.74855		2.22614
53 Isobutanol	+++++ / 357344	9260	21305	45179	144952	369080	LINR	-0.12620	0.04180		0.99593

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 29-SEP-2017 14:50
End Cal Date : 29-SEP-2017 16:35
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv1.i\092917A.b\8260WLL.m
Last Edit : 30-Sep-2017 12:57 zosborne

Compound (all.sp)	1.0000 Level 1	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients			%RSD or R^2
	00.0000 Level 8										
103 1,2-Dibromo-3-Chloropropane	0.26432	0.28428	0.25286	0.23108	0.26399	0.25340					
	0.26128						AVRG		0.25674		6.75247
104 Hexachloro-1,3-butadiene	0.21811	0.24707	0.24622	0.22495	0.23458	0.22734					
	0.24346						AVRG		0.23453		4.88296
105 1,2,4-Trichlorobenzene	0.48168	0.63627	0.59743	0.59824	0.61342	0.59748					
	0.59022						AVRG		0.58781		8.36099
106 Naphthalene	2.12709	2.11781	2.07904	2.08311	2.06011	2.01409					
	1.00052						AVRG		2.08311		3.51725
107 1,2,3-Trichlorobenzene	0.47429	0.56317	0.54793	0.58187	0.58373	0.55396					
	0.53880						AVRG		0.54911		6.73190
$ 5 1,2-Dichloroethane-d4 (S)	0.55752	0.63929	0.63023	0.67684	0.69133	0.69996					
	0.71875						AVRG		0.65913		8.33857
$ 6 Toluene-d8 (S)	1.22930	1.22463	1.18001	1.14995	1.11814	1.05647					
	1.08169						AVRG		1.14860		5.86934

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 29-SEP-2017 14:50
End Cal Date : 29-SEP-2017 16:35
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msvl.i\092917A.b\8260WLL.m
Last Edit : 30-Sep-2017 12:57 zosborne

Compound (all.sb)	1.0000 Level 1	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
	200.0000 Level 8										
IS 7 4-Bromofluorobenzene (S)	1.51761	1.51629	1.54882	1.46727	1.43795	1.47183					
	1.44110						AVRG		1.47368		3.34127

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 29-SEP-2017 14:50
End Cal Date : 29-SEP-2017 16:35
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv1.i\092917A.b\8260WLL.m
Last Edit : 30-Sep-2017 12:57 zosborne

Average %RSD Results.

Calculated Average %RSD = 9.97155
Maximum Average %RSD = 0.000e+000
* Failed Average %RSD Test.

Curve	Formula	Units
Averaged	Amt = Rsp/ml	Response
Linear	Amt = b + ml*Rsp	Amount

Data File: \\Wt\chem\92msv1.i\092917A.b\09291722.D
Report Date: 13-Oct-2017 11:31

inj 9/29 @ 17:10 <12 hrs

Pace Analytical Services, Inc.

RECOVERY REPORT

Client Name:
Sample Matrix: Liquid
Lab Smp Id: ICV
Level: LOW
Data Type: MS DATA
SpikeList File: ICV.spk
Sublist File: all.sub
Method File: \\Wt\chem\92msv1.i\092917A.b\8260WLL.m
Misc Info: ,ICV

Client SDG: SDGa27970
Fraction: VOA

Operator: CAH
SampleType: ICV
Quant Type: ISTD

Benzene only

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 Dichlorodifluorome	50.0	42.9	85.84	70-130
9 Chloromethane	50.0	47.3	94.54	70-130
10 Vinyl Chloride	50.0	50.3	100.66	70-130
11 Bromomethane	50.0	47.2	94.34	70-130
12 Chloroethane	50.0	45.4	90.89	70-130
13 Trichlorofluoromet	50.0	44.1	88.28	70-130
14 Ethyl Ether	50.0	58.5	117.00	70-130
15 Ethanol	2000	3050	152.54*	70-130
16 1,1-Dichloroethene	50.0	54.1	108.23	70-130
17 1,1,2-Trichlorotri	50.0	55.9	111.87	70-130
18 Carbon Disulfide	50.0	54.6	109.24	70-130
19 Iodomethane	100	98.6	98.63	70-130
20 Acrolein	250	390	156.01*	70-130
21 Allyl chloride	50.0	50.2	100.46	70-130
22 Methylene Chloride	50.0	52.8	105.60	70-130
23 Acetone	100	128	127.87	70-130
24 Methyl Acetate	50.0	59.0	118.06	70-130
25 trans-1,2-Dichloro	50.0	55.4	110.75	70-130
26 Methyl-tert-butyl	50.0	51.6	103.18	70-130
27 n-Hexane	50.0	47.1	94.22	70-130
28 tert-Butyl Alcohol	500	567	113.34	70-130
29 Acetonitrile	500	558	111.57	70-130
30 Diisopropyl Ether	50.0	56.0	111.99	70-130
31 2-Chloro-1,3-Butad	50.0	52.8	105.70	70-130
32 1,1-Dichloroethane	50.0	50.6	101.24	70-130
33 Acrylonitrile	250	273	109.13	70-130
34 Ethyl-tert-butyl e	100	108	107.87	70-130
35 Vinyl Acetate	100	101	100.79	70-130
36 cis-1,2-Dichloroet	50.0	53.7	107.34	70-130
37 2,2-Dichloropropan	50.0	55.5	110.93	70-130
38 Bromochloromethane	50.0	51.6	103.19	70-130
39 Cyclohexane	50.0	56.9	113.75	70-130
40 Chloroform	50.0	48.9	97.87	70-130
41 Ethyl Acetate	100	111	111.38	70-130
42 Tetrahydrofuran	500	584	116.78	70-130
43 Carbon Tetrachlori	50.0	54.0	107.92	70-130
44 1,1,1-Trichloroeth	50.0	54.5	108.94	70-130
45 2-Butanone	100	104	103.60	70-130
46 1,1-Dichloropropen	50.0	52.1	104.13	70-130
47 tert-Butyl Formate	400	383	95.87	70-130

80-120

SPIKE	COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
48	Benzene	50.0	50.4	100.82	70-130
49	Propionitrile	500	552	110.41	70-130
50	Methacrylonitrile	500	490	98.04	70-130
51	tert-Amylmethyl et	100	101	100.85	70-130
52	1,2-Dichloroethane	50.0	51.2	102.40	70-130
53	Isobutanol	1000	1090	109.09	70-130
54	tert-Amyl Alcohol	1000	1260	125.97	70-130
55	Methylcyclohexane	50.0	50.0	99.93	70-130
56	Trichloroethene	50.0	54.8	109.60	70-130
57	Dibromomethane	50.0	48.3	96.54	70-130
58	1,2-Dichloropropan	50.0	53.7	107.47	70-130
59	Bromodichlorometha	50.0	52.4	104.74	70-130
60	Methyl methacrylat	50.0	46.1	92.30	70-130
61	1,4-Dioxane	1000	1700	170.37*	70-130
62	2-Chloroethyl Viny	100	101	100.77	70-130
63	cis-1,3-Dichloropr	50.0	56.3	112.54	70-130
64	Toluene	50.0	45.5	90.97	70-130
65	Tetrachloroethene	50.0	51.2	102.35	70-130
66	4-Methyl-2-Pentano	100	96.6	96.63	70-130
67	trans-1,3-Dichloro	50.0	52.6	105.17	70-130
68	1,1,2-Trichloroeth	50.0	52.2	104.42	70-130
69	Ethyl methacrylate	50.0	51.2	102.32	70-130
70	Dibromochlorometha	50.0	49.7	99.49	70-130
71	1,3-Dichloropropan	50.0	51.7	103.34	70-130
72	1,2-Dibromoethane	50.0	57.1	114.18	70-130
73	3,3-Dimethyl-1-but	1000	1190	118.64	70-130
74	2-Hexanone	100	104	104.41	70-130
75	Chlorobenzene	50.0	49.9	99.74	70-130
76	Ethylbenzene	50.0	49.6	99.32	70-130
77	1,1,1,2-Tetrachlor	50.0	53.3	106.55	70-130
78	m&p-Xylene	100	105	104.95	70-130
79	o-Xylene	50.0	53.1	106.15	70-130
80	Styrene	50.0	51.5	102.99	70-130
81	Bromoform	50.0	54.0	107.92	70-130
82	Isopropylbenzene (	50.0	51.2	102.38	70-130
83	cis 1,4-dichloro-2	50.0	50.9	101.77	70-130
84	Bromobenzene	50.0	49.8	99.66	70-130
85	n-Propylbenzene	50.0	52.9	105.87	70-130
86	1,1,2,2-Tetrachlor	50.0	50.9	101.76	70-130
87	2-Chlorotoluene	50.0	52.2	104.35	70-130
88	1,3,5-Trimethylben	50.0	51.2	102.30	70-130
89	1,2,3-Trichloropro	50.0	51.6	103.19	70-130
90	trans 1,4-Dichloro	50.0	67.8	135.67*	70-130
91	Cyclohexanone	2500	3980	159.06*	70-130
92	4-Chlorotoluene	50.0	51.5	103.02	70-130
93	tert-Butylbenzene	50.0	43.4	86.88	70-130
95	1,2,4-Trimethylben	50.0	48.5	96.94	70-130
96	sec-Butylbenzene	50.0	53.6	107.29	70-130
97	p-Isopropyltoluene	50.0	51.1	102.24	70-130
98	1,3-Dichlorobenzen	50.0	50.4	100.82	70-130
99	1,4-Dichlorobenzen	50.0	48.2	96.48	70-130
100	1,2,3-Trimethylben	50.0	50.0	99.91	70-130
101	n-Butylbenzene	50.0	50.3	100.61	70-130
102	1,2-Dichlorobenzen	50.0	50.5	100.96	70-130

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
103 1,2-Dibromo-3-Chlo	50.0	50.2	100.51	70-130
104 Hexachloro-1,3-but	50.0	56.1	112.26	70-130
105 1,2,4-Trichloroben	50.0	52.5	105.00	70-130
106 Naphthalene	50.0	51.2	102.48	70-130
107 1,2,3-Trichloroben	50.0	54.0	107.94	70-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 5 1,2-Dichloroethane	50.0	54.2	108.32	70-130
$ 6 Toluene-d8 (S)	50.0	46.9	93.83	70-130
$ 7 4-Bromofluorobenze	50.0	51.9	103.86	70-130

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msvl.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/09291701.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	10:44	CAH	
1/09291702.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	11:02	CAH	
1/09291703.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	11:19	CAH	
1/09291704.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	11:37	CAH	
1/09291705.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	11:54	CAH	
1/09291706.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	12:12	CAH	
1/09291707.D		L/	SAMPLE	1	< 2	8260WLL	9/29/17	12:30	CAH	
1/09291708.D	BFB	L/,system test	BFB	1	< 2	BFB	9/29/17	13:04	DJT	
1/09291709.D	BFB	L/,system test	BFB	1	< 2	BFB	9/29/17	13:22	DJT	
1/09291710.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	13:39	CAH	
1/09291711.D	system test	L/,system test	BFB	1	< 2	BFB	9/29/17	13:57	CAH	
1/09291712.D	system test	L/,system test	SAMPLE	1	< 2	8260WLL	9/29/17	14:14	CAH	
1/09291713bfb.D	ical_1	L/,bfb	BFB	1	< 2	BFB	9/29/17	14:32	CAH	
1/09291714.D	ical_2	L/,ical_2	CALIB_2	1	< 2	8260WLL	9/29/17	14:50	CAH	
1/09291714b.D	ical_2	L/,ical_2	CALIB_2	1	< 2	624	9/29/17	14:50	CAH	
1/09291715.D	ical_3	L/,ical_3	CALIB_3	1	< 2	8260WLL	9/29/17	15:07	CAH	
1/09291715b.D	ical_3	L/,ical_3	CALIB_3	1	< 2	624	9/29/17	15:07	CAH	
1/09291716.D	ical_4	L/,ical_4	CALIB_4	1	< 2	8260WLL	9/29/17	15:25	CAH	
1/09291716b.D	ical_4	L/,ical_4	CALIB_4	1	< 2	624	9/29/17	15:25	CAH	
1/09291717.D	ical_5	L/,ical_5	CALIB_5	1	< 2	8260WLL	9/29/17	15:43	CAH	
1/09291717b.D	ical_5	L/,ical_5	CALIB_5	1	< 2	624	9/29/17	15:43	CAH	
1/09291718.D	ical_6	L/,ical_6	CALIB_6	1	< 2	8260WLL	9/29/17	16:00	CAH	
1/09291718b.D	ical_6	L/,ical_6	CALIB_6	1	< 2	624	9/29/17	16:00	CAH	
1/09291719.D	ical_7	L/,ical_7	CALIB_7	1	< 2	8260WLL	9/29/17	16:18	CAH	
1/09291719b.D	ical_7	L/,ical_7	CALIB_7	1	< 2	624	9/29/17	16:18	CAH	
1/09291720.D	ical_8	L/,ical_8	CALIB_8	1	< 2	8260WLL	9/29/17	16:35	CAH	
1/09291720b.D	ical_8	L/,ical_8	CALIB_8	1	< 2	624	9/29/17	16:35	CAH	
1/09291721.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	9/29/17	16:53	CAH	
1/09291722.D	ICV	L/,ICV	ICV	1	< 2	8260WLL	9/29/17	17:10	CAH	
1/09291723.D	ICV	L/,ICV	ICV	1	< 2	8260WLL	9/29/17	17:28	CAH	
1/09291724.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	9/29/17	17:46	CAH	
1/09291725.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	9/29/17	18:03	CAH	
1/09291726.D	mb	L/,mb	SAMPLE	1	< 2	8260WLL	9/29/17	18:21	CAH	
1/09291727.D	mb	L/,mb	SAMPLE	1	< 2	8260WLL	9/29/17	18:39	CAH	

4.12hrs

Check Maintenance Items Performed:

___ Changed septum ___ Clipped column ___ Changed column (lot #_____ ___)
___ Cleaned liner ___ Changed trap (lot #_____) ___ Other minor parts replaced
___ Replaced/Cleaned gold seal ___ Cleaned MS source ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msvl.i\092917A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 13:43 09/30/2017

Page: 1

Performance Check

Data File: \\Wt\chem\92msv1.i\100117A.b\10011704bfb.D
Inj Date: 01-OCT-2017 15:36

Lab Sample ID: lcs
Client Sample ID: BFB
Spectrum: Avg. Scans 1160-1162 (7.89), Background Scan 1156
Performance Check: PASSED 01-Oct-2017 15:57

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	26.41
75	30.00 - 60.00% of mass 95	49.10
96	5.00 - 9.00% of mass 95	6.23
173	Less than 2.00% of mass 174	0.53 (0.55)
174	Greater than 50.00% of mass 95	95.85
175	5.00 - 9.00% of mass 174	6.99 (7.29)
176	95.00 - 101.00% of mass 174	93.91 (97.98)
177	5.00 - 9.00% of mass 176	6.11 (6.51)

assoc w/
-6,7

Data File: \\Wt\chem\92msv1.i\100117A.b\10011704CCALfull.d Page 1
Report Date: 01-Oct-2017 15:56

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Benzene only

Instrument ID: 92msv1.i Injection Date: 01-OCT-2017 15:36
Lab File ID: 10011704CCALful Init. Cal. Date(s): 29-SEP-2017 29-SEP-2017
Analysis Type: WATER Init. Cal. Times: 14:50 16:35
Lab Sample ID: lcs Quant Type: ISTD
Method: \\Wt\chem\92msv1.i\100117A.b\8260WLL.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
$ 5 1,2-Dichloroethane-d4 (S)	0.65913	0.69994	0.69994	0.010	6.19075	20.00000	Aver	
$ 6 Toluene-d8 (S)	1.14560	1.06239	1.06239	0.010	-7.50548	20.00000	Aver	
$ 7 4-Bromofluorobenzene (S)	1.47968	1.57535	1.57535	0.010	6.53763	20.00000	Aver	
8 Dichlorodifluoromethane	0.65143	0.58367	0.58367	0.010	-10.40223	20.00000	Aver	
9 Chloromethane	1.09153	0.98123	0.98123	0.100	-10.10494	20.00000	Aver	
10 Vinyl Chloride	0.82623	0.81906	0.81906	0.010	-0.86787	20.00000	Aver	
11 Bromomethane	0.28218	0.22846	0.22846	0.010	-19.03856	20.00000	Aver	
12 Chloroethane	0.42996	0.38885	0.38885	0.010	-9.56025	20.00000	Aver	
13 Trichlorofluoromethane	0.86331	0.75826	0.75826	0.010	-12.16920	20.00000	Aver	
14 Ethyl Ether	0.46850	0.50134	0.50134	0.010	7.00893	20.00000	Aver	
15 Ethanol	0.00747	0.01370	0.01370	0.010	73.99728	20.00000	Aver	<-
16 1,1-Dichloroethene	0.93040	0.95821	0.95821	0.010	2.98856	20.00000	Aver	
17 1,1,2-Trichlorotrifluoroeth	0.44831	0.50440	0.50440	0.010	12.51136	20.00000	Aver	
18 Carbon Disulfide	1.29241	1.44111	1.44111	0.010	11.50566	20.00000	Aver	
19 Iodomethane	100	86.84253	0.52851	0.010	-13.15747	20.00000	Line	
20 Acrolein	0.08859	0.11232	0.11232	0.010	26.80451	20.00000	Aver	<-
21 Allyl chloride	0.26946	0.26153	0.26153	0.010	-2.94299	20.00000	Aver	
22 Methylene Chloride	50.00000	51.03067	0.96019	0.010	2.06133	20.00000	Line	
23 Acetone	0.19353	0.25265	0.15265	0.010	30.55175	20.00000	Aver	<-
24 Methyl Acetate	0.07092	0.07785	0.07785	0.010	9.77334	20.00000	Aver	
25 trans-1,2-Dichloroethene	0.89004	0.95205	0.95205	0.010	6.96654	20.00000	Aver	
26 Methyl-tert-butyl Ether	50.00000	49.91970	1.31128	0.010	-0.16060	20.00000	Line	
27 n-Hexane	50.00000	46.86597	1.19032	0.010	-6.26807	20.00000	Line	
28 tert-Butyl Alcohol	500	512	0.08988	0.010	2.49659	20.00000	Line	
29 Acetonitrile	0.08448	0.09197	0.09197	0.010	8.85421	20.00000	Aver	
30 Diisopropyl Ether	2.02252	2.27523	2.27523	0.010	12.49502	20.00000	Aver	
31 2-Chloro-1,3-Butadiene	50.00000	53.56747	1.73351	0.010	5.13494	20.00000	Line	
32 1,1-Dichloroethane	1.17398	1.19240	1.19240	0.100	1.68422	20.00000	Aver	
33 Acrylonitrile	0.30675	0.32353	0.32353	0.010	5.47064	20.00000	Aver	
34 Ethyl-tert-butyl ether	1.76082	1.88365	1.88365	0.010	7.54409	20.00000	Aver	
35 Vinyl Acetate	100	102	1.70780	0.010	1.68850	20.00000	Line	
36 cis-1,2-Dichloroethene	0.91711	0.97357	0.97357	0.010	6.15589	20.00000	Aver	
37 2,2-Dichloropropane	0.81044	0.88670	0.88670	0.010	9.40914	20.00000	Aver	
38 Bromochloromethane	0.31776	0.33290	0.33290	0.010	4.76745	20.00000	Aver	
39 Cyclohexane	1.23465	1.35918	1.35918	0.010	10.08637	20.00000	Aver	(M)
40 Chloroform	0.92409	0.88461	0.88461	0.010	-4.27158	20.00000	Aver	
41 Ethyl Acetate	0.94515	0.99708	0.99708	0.010	5.49442	20.00000	Aver	
42 Tetrahydrofuran	0.24981	0.27469	0.27469	0.010	10.48793	20.00000	Aver	
43 Carbon Tetrachloride	0.46037	0.50762	0.50762	0.010	10.26409	20.00000	Aver	
44 1,1,1-Trichloroethane	0.83162	0.91372	0.91372	0.010	9.87239	20.00000	Aver	
45 2-Butanone	100	102	0.35771	0.010	1.96598	20.00000	Line	
46 1,1-Dichloropropene	50.00000	50.94965	0.76836	0.010	1.89930	20.00000	Line	

Data File: \\Wt\chem\92msv1.i\100117A.b\10011704CCALful
Report Date: 01-Oct-2017 15:56

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv1.i Injection Date: 01-OCT-2017 15:36
Lab File ID: 10011704CCALful Init. Cal. Date(s): 29-SEP-2017 29-SEP-2017
Analysis Type: WATER Init. Cal. Times: 14:50 16:35
Lab Sample ID: lcs Quant Type: ISTD
Method: \\Wt\chem\92msv1.i\100117A.b\8260WLL.m

70.05 ≤ 20

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
47 tert-Butyl Formate	400	410	0.66482	0.010	2.43631	20.00000	Line	
48 Benzene	1.20977	1.24723	1.24723	0.010	3.09607	20.00000	Aver	
49 Propionitrile	0.11082	0.12258	0.12258	0.010	10.60967	20.00000	Aver	
50 Methacrylonitrile	500	494	0.42494	0.010	-1.17400	20.00000	Line	
51 tert-Amylmethyl ether	0.74066	0.76974	0.76974	0.010	3.92568	20.00000	Aver	
52 1,2-Dichloroethane	0.74855	0.78167	0.78167	0.010	4.42416	20.00000	Aver	
53 Isobutanol	1000	1002	0.93809	0.010	6.22283	20.00000	Line	
54 tert-Amyl Alcohol	0.03806	0.04547	0.04547	0.010	19.47936	20.00000	Aver	
55 Methylcyclohexane	0.45162	0.47896	0.47896	0.010	6.07545	20.00000	Aver	
56 Trichloroethene	0.33730	0.37515	0.37515	0.010	11.25595	20.00000	Aver	
57 Dibromomethane	0.20971	0.22515	0.22515	0.010	7.36059	20.00000	Aver	
58 1,2-Dichloropropane	0.37629	0.42131	0.42131	0.010	11.96469	20.00000	Aver	
59 Bromodichloromethane	0.38920	0.42514	0.42514	0.010	9.23223	20.00000	Aver	
60 Methyl methacrylate	0.35446	0.34398	0.34398	0.010	-2.95720	20.00000	Aver	
61 1,4-Dioxane	1000	1843	0.00489	0.010	84.33743	20.00000	Line	<-
62 2-Chloroethyl Vinyl Ether	0.18633	0.19208	0.19208	0.010	3.08835	20.00000	Aver	
63 cis-1,3-Dichloropropene	0.43616	0.50728	0.50728	0.010	16.30552	20.00000	Aver	
64 Toluene	1.22625	1.11484	1.11484	0.010	-9.01095	20.00000	Aver	
65 Tetrachloroethene	1.24662	1.30473	1.30473	0.010	4.66163	20.00000	Aver	
66 4-Methyl-2-Pentanone	0.42243	0.40586	0.40586	0.010	-3.92262	20.00000	Aver	
67 trans-1,3-Dichloropropene	0.39373	0.44649	0.44649	0.010	13.39989	20.00000	Aver	
68 1,1,2-Trichloroethane	0.22810	0.24246	0.24246	0.010	6.29438	20.00000	Aver	
69 Ethyl methacrylate	1.38477	1.44535	1.44535	0.010	4.37495	20.00000	Aver	
70 Dibromochloromethane	50.00000	52.30331	1.29649	0.010	4.61062	20.00000	Line	
71 1,3-Dichloropropane	50.00000	52.85663	1.80429	0.010	5.71326	20.00000	Line	
72 1,2-Dibromoethane	0.93968	1.09641	1.09641	0.010	16.67891	20.00000	Aver	
73 3,3-Dimethyl-1-butanol	0.09961	0.11203	0.11203	0.010	12.46001	20.00000	Aver	
74 2-Hexanone	1.69745	1.80390	1.80390	0.010	6.27130	20.00000	Aver	
75 Chlorobenzene	2.82994	2.77754	2.77754	0.300	-1.85180	20.00000	Aver	
76 Ethylbenzene	4.89097	4.96814	4.96814	0.010	1.57793	20.00000	Aver	
77 1,1,1,2-Tetrachloroethane	0.99500	1.06372	1.06372	0.300	6.90634	20.00000	Aver	
78 m&p-Xylene	3.67777	3.93328	3.93328	0.010	6.94735	20.00000	Aver	
79 o-Xylene	1.73836	1.83799	1.83799	0.010	5.73154	20.00000	Aver	
80 Styrene	2.90223	3.14030	3.14030	0.010	8.20221	20.00000	Aver	
81 Bromoform	0.70204	0.77791	0.77791	0.100	10.80727	20.00000	Aver	
82 Isopropylbenzene (Cumene)	4.14315	4.39295	4.39295	0.010	6.02898	20.00000	Aver	
83 cis 1,4-dichloro-2-butene	1.78040	1.86081	1.86081	0.010	4.51640	20.00000	Aver	
84 Bromobenzene	0.76914	0.71897	0.71897	0.010	-6.52390	20.00000	Aver	
85 n-Propylbenzene	2.69714	2.74682	2.74682	0.010	1.84205	20.00000	Aver	
86 1,1,2,2-Tetrachloroethane	1.12506	1.13924	1.13924	0.300	1.26052	20.00000	Aver	
87 2-Chlorotoluene	1.71345	1.71679	1.71679	0.010	0.19498	20.00000	Aver	
88 1,3,5-Trimethylbenzene	1.63273	1.55522	1.55522	0.010	-4.74727	20.00000	Aver	
89 1,2,3-Trichloropropane	1.03525	1.07203	1.07203	0.010	3.55305	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv1.i Injection Date: 01-OCT-2017 15:36
Lab File ID: 10011704CCALful Init. Cal. Date(s): 29-SEP-2017 29-SEP-2017
Analysis Type: WATER Init. Cal. Times: 14:50 16:35
Lab Sample ID: lcs Quant Type: ISTD
Method: \\Wt\chem\92msv1.i\100117A.b\8260WLL.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS	
90 trans 1,4-Dichloro-2-butene	0.92240	1.31901	1.31901	0.010	42.99649	20.00000	Aver	(Q)	<-
91 Cyclohexanone	0.24088	0.42798	0.42798	0.010	77.67150	20.00000	Aver		<-
92 4-Chlorotoluene	1.74707	1.71961	1.71961	0.010	-1.57211	20.00000	Aver		
93 tert-Butylbenzene	1.87170	1.60110	1.60110	0.010	-14.45762	20.00000	Aver		
94 Pentachloroethane	0.38288	++++	++++	0.010	++++	20.00000	Averaged		<-
95 1,2,4-Trimethylbenzene	1.74371	1.66713	1.66713	0.010	-4.39155	20.00000	Aver		
96 sec-Butylbenzene	2.04672	2.11624	2.11624	0.010	3.39646	20.00000	Aver		
97 p-Isopropyltoluene	1.73865	1.68951	1.68951	0.010	-2.82618	20.00000	Aver		
98 1,3-Dichlorobenzene	1.15960	1.13862	1.13862	0.010	-1.80915	20.00000	Aver		
99 1,4-Dichlorobenzene	1.21632	1.16020	1.16020	0.010	-4.61404	20.00000	Aver		
100 1,2,3-Trimethylbenzene	1.84769	1.73317	1.73317	0.010	-5.94316	20.00000	Aver		
101 n-Butylbenzene	1.35302	1.31744	1.31744	0.010	-2.62971	20.00000	Aver		
102 1,2-Dichlorobenzene	1.11918	1.09357	1.09357	0.010	-2.28612	20.00000	Aver		
103 1,2-Dibromo-3-Chloropropane	0.25874	0.24575	0.24575	0.010	-5.02197	20.00000	Aver		
104 Hexachloro-1,3-butadiene	0.23452	0.26744	0.26744	0.010	14.03187	20.00000	Aver		
105 1,2,4-Trichlorobenzene	0.58781	0.65157	0.65157	0.010	10.84634	20.00000	Aver		
106 Naphthalene	2.08311	2.04159	2.04159	0.010	-1.99321	20.00000	Aver		
107 1,2,3-Trichlorobenzene	0.34911	0.60737	0.60737	0.010	10.60997	20.00000	Aver		

QC Flag Legend

Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.

Average %D / Drift Results.

Calculated Average %D/Drift = 9.59030
Maximum Average %D/Drift = 0.000e+000
** Failed Average %D/Drift Test.

Pace Analytical Services, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: 92msv1.i
Lab File ID: 10011704CCALfull.d
Lab Smp Id: lcs
Analysis Type: VOA
Quant Type: ISTD
Operator: CAH
Method File: \\Wt\chem\92msv1.i\100117A.b\8260WLL.m
Misc Info: ,lcs

Calibration Date: 01-OCT-2017
Calibration Time: 15:01

Level: LOW
Sample Type: WATER

Test Mode:
Use Last Continuing Calibrator.
If Continuing Cal. use Initial Cal. Level 6

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	238829	119415	477658	220474	-7.69
2 1,4-difluorobenze	364531	182266	729062	333173	-8.60
3 Chlorobenzene-d5	89193	44597	178386	77563	-13.04
4 1,4-Dichlorobenze	134745	67373	269490	128952	-4.30

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	3.96	3.46	4.46	3.96	-0.00
2 1,4-difluorobenze	4.54	4.04	5.04	4.54	-0.00
3 Chlorobenzene-d5	7.16	6.66	7.66	7.16	-0.00
4 1,4-Dichlorobenze	8.47	7.97	8.97	8.47	-0.07

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10011704CCALFULL Date Analyzed: 10/01/17

Instrument ID: 92MSV1 Time Analyzed: 1536

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 (DFB) AREA #	RT
	12 HOUR STD	77563	7.16	128952	8.47	333173	4.54
	UPPER LIMIT	155126	7.66	257904	8.97	666346	5.04
	LOWER LIMIT	38782	6.66	64476	7.97	166587	4.04
	EPA SAMPLE NO.						
01	LCS	78907	7.16	126477	8.47	340317	4.54
02	BLANK	84428	7.16	124198	8.47	289822	4.54
03	TW-9	75372	7.16	115265	8.47	275698	4.54
04	DUPLICATE	79500	7.16	111092	8.47	273500	4.54
05	MS	77659	7.16	118925	8.47	315270	4.54
06	MSD	74263	7.16	119004	8.47	302764	4.54
07							
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21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10011704CCALFULL Date Analyzed: 10/01/17

Instrument ID: 92MSV1 Time Analyzed: 1536

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	220474	3.96				
	UPPER LIMIT	440948	4.46				
	LOWER LIMIT	110237	3.46				
	EPA SAMPLE NO.						
01	LCS	233303	3.96				
02	BLANK	223097	3.96				
03	TW-9	213607	3.96				
04	DUPLICATE	216626	3.96				
05	MS	218943	3.96				
06	MSD	215374	3.96				
07							
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22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv1.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Matrix/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10011701.D	bfb	L/,bfb	BFB	1	< 2	BFB	10/01/17	14:43	CAH	
1/10011702.D	ccal_6	L/,ccal_6	CCALIB_6	1	< 2	8260WLL	10/01/17	15:01	CAH	
1/10011702bfb.D	ccal_6	L/,ccal_6	BFB	1	< 2	BFB	10/01/17	15:01	CAH	
1/10011703.D	lcs	L/,lcs	SAMPLE	1	< 2	8260WLL	10/01/17	15:19	CAH	
1/10011704.D	lcs	L/,lcs	LCS	1	< 2	8260WLL	10/01/17	15:36	CAH	
1/10011704bfb.D	lcs	L/,lcs	BFB	1	< 2	BFB	10/01/17	15:36	CAH	
1/10011704CCAL.D	lcs	L/,lcs	CCALIB_6	1	< 2	8260WLL	10/01/17	15:36	CAH	
1/10011704CCAL.full.d	lcs	L/,lcs	CCALIB_6	1	< 2	8260WLL	10/01/17	15:36	CAH	
1/10011705.D	lcs	L/,lcs	SAMPLE	1	< 2	8260WLL	10/01/17	15:53	CAH	
1/10011706.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/01/17	16:11	CAH	
1/10011707.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/01/17	16:29	CAH	
1/10011708.D	mb	L/,mb	SAMPLE	1	< 2	8260WLL	10/01/17	16:48	CAH	
1/10011709.D	mb	L/,mb	SAMPLE	1	< 2	8260WLL	10/01/17	17:04	CAH	
1/10011710.D	92356942004	L/43376,92356942004	SAMPLE	1	< 2	8260WLL	10/01/17	17:22	CAH	
1/10011711.D	92356942005	L/43376,92356942005	SAMPLE	1	< 2	8260WLL	10/01/17	17:39	CAH	
1/10011712.D	92356942001	L/43376,92356942001	SAMPLE	1	< 2	8260WLL	10/01/17	17:57	CAH	
1/10011713.D	92356942002	L/43376,92356942002	SAMPLE	1	< 2	8260WLL	10/01/17	18:14	CAH	
1/10011714.D	92356942003	L/43376,92356942003	SAMPLE	1	< 2	8260WLL	10/01/17	18:32	CAH	
1/10011715.D	92357183002	L/43376,92357183002	SAMPLE	1	< 2	8260WLL	10/01/17	18:49	CAH	
1/10011716.D	92357183004	L/43376,92357183004	SAMPLE	1	< 2	8260WLL	10/01/17	19:07	CAH	
1/10011717.D	92357183005	L/43376,92357183005	SAMPLE	1	< 2	8260WLL	10/01/17	19:24	CAH	
1/10011718.D	92357183006	L/43376,92357183006	SAMPLE	1	< 2	8260WLL	10/01/17	19:42	CAH	
1/10011719.D	92357183007	L/43376,92357183007	SAMPLE	1	< 2	8260WLL	10/01/17	20:00	CAH	
1/10011720.D	92357183008	L/43376,92357183008	SAMPLE	1	< 2	8260WLL	10/01/17	20:17	CAH	
1/10011721.D	92357183011	L/43376,92357183011	SAMPLE	1	< 2	8260WLL	10/01/17	20:35	CAH	
1/10011722.D	92356929002	L/43377,92356929002	SAMPLE	1	< 2	8260WLL	10/01/17	20:53	CAH	
1/10011723.D	92356929003	L/43377,92356929003	SAMPLE	1	< 2	8260WLL	10/01/17	21:10	CAH	
1/10011724.D	92356933001	L/43377,92356933001	SAMPLE	1	< 2	8260WLL	10/01/17	21:28	CAH	
1/10011725.D	92356933002	L/43377,92356933002	SAMPLE	1	< 2	8260WLL	10/01/17	21:45	CAH	
1/10011726.D	92357125010	L/43377,92357125010	SAMPLE	1	< 2	8260WLL	10/01/17	22:03	CAH	
1/10011727.D	92357309005	L/43377,92357309005	SAMPLE	1	< 2	8260WLL	10/01/17	22:20	CAH	
1/10011728.D	92357309006	L/43377,92357309006	SAMPLE	1	< 2	8260WLL	10/01/17	22:38	CAH	
1/10011729.D	92357050006	L/43377,92357050006	SAMPLE	1	< 2	8260WLL	10/01/17	22:56	CAH	
1/10011730.D	92357050007	L/43377,92357050007	SAMPLE	1	< 2	8260WLL	10/01/17	23:13	CAH	612 hrs

Check Maintenance Items Performed:

___ Changed septum ___ Clipped column ___ Changed column (lot #_____)
___ Cleaned line: ___ Changed trap (lot #_____) ___ Other minor parts replaced
___ Replaced/Cleaned gold seal ___ Cleaned MS source ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv1.i\100117A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 11:42 10/02/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv1.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10011731.D	92357183001	L/43377,92357183001	SAMPLE	1		< 2 8260WLL	10/01/17	23:31	CAH	
1/10011732.D	92357183003	L/43377,92357183003	SAMPLE	4		< 2 8260WLL	10/01/17	23:48	CAH	
1/10011733.D	92357183009	L/43377,92357183009	SAMPLE	4		< 2 8260WLL	10/02/17	00:06	CAH	
1/10011734.D	92357183010	L/43377,92357183010	SAMPLE	10		< 2 8260WLL	10/02/17	00:24	CAH	
1/10011735.D	92357297002	L/43377,92357297002	SAMPLE	10		< 2 8260WLL	10/02/17	00:41	CAH	
1/10011736.D	92357125001	L/43377,92357125001	SAMPLE	2		< 2 8260WLL	10/02/17	00:59	CAH	
1/10011737.D	92357125007	L/43377,92357125007	SAMPLE	2		< 2 8260WLL	10/02/17	01:16	CAH	
1/10011738.D	92357125008	L/43377,92357125008	SAMPLE	2		< 2 8260WLL	10/02/17	01:34	CAH	
1/10011739.D	92357125009	L/43377,92357125009	SAMPLE	2		< 2 8260WLL	10/02/17	01:52	CAH	
1/10011740.D	2107694	L/43377,2107694	SAMPLE	1		< 2 8260WLL	10/02/17	02:09	CAH	
1/10011741.D	2107695	L/43377,2107695	SAMPLE	1		< 2 8260WLL	10/02/17	02:27	CAH	
1/10011742.D	2107690	L/43376,2107690	SAMPLE	1		< 2 8260WLL	10/02/17	02:45	CAH	
1/10011743.D	2107691	L/43376,2107691	SAMPLE	1		< 2 8260WLL	10/02/17	03:02	CAH	

≤12 hrs

File Path 1: \\Wt\chem\92msv1.i\100117A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 11:42 10/02/2017

Performance Check

Data File: \\Wt\chem\92msv1.i\100117B.b\10011745bfb.D
Inj Date: 02-OCT-2017 03:37

Lab Sample ID: bfb
Client Sample ID: BFB
Spectrum: Avg. Scans 1160-1162 (7.89), Background Scan 1156
Performance Check: PASSED 02-Oct-2017 08:15

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	24.27
75	30.00 - 60.00% of mass 95	50.37
96	5.00 - 9.00% of mass 95	6.73
173	Less than 2.00% of mass 174	0.24 (0.25)
174	Greater than 50.00% of mass 95	95.33
175	5.00 - 9.00% of mass 174	7.38 (7.74)
176	95.00 - 101.00% of mass 174	93.74 (98.33)
177	5.00 - 9.00% of mass 176	5.87 (6.26)

assoc w/ Batch 06 only

Data File: \\Wt\chem\92msv1.i\100117B.b\10011745.D
Report Date: 02-Oct-2017 08:16

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Bregnal only

Instrument ID: 92msv1.i
Lab File ID: 10011745.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv1.i\100117B.b\8260WLL.m

Injection Date: 02-OCT-2017 03:37
Init. Cal. Date(s): ~~29-SEP-2017~~ 29-SEP-2017
Init. Cal. Times: 14:50 16:35
Quant Type: ISTD

		COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
$	5	1,2-Dichloroethane-d4 (S)	0.68913	0.70306	0.70306	0.010	6.66483	20.00000	Aver	
$	6	Toluene-d8 (S)	1.14860	1.08934	1.08934	0.010	-5.15961	20.00000	Aver	
$	7	4-Bromofluorobenzene (S)	1.47868	1.43748	1.43749	0.010	-2.78606	20.00000	Aver	
	8	Dichlorodifluoromethane	0.68143	0.61850	0.61850	0.010	-5.36134	20.00000	Aver	
	9	Chloromethane	1.09153	0.75201	0.75201	0.100	-31.10521	20.00000	Aver	<-
	10	Vinyl Chloride	0.82623	0.77175	0.77175	0.010	-6.59373	20.00000	Aver	
	11	Bromomethane	0.28218	0.09617	0.09617	0.010	-65.91855	20.00000	Aver	<-
	12	Chloroethane	0.47996	0.38293	0.38293	0.010	-10.98056	20.00000	Aver	
	13	Trichlorofluoromethane	0.86332	0.81279	0.81279	0.010	-5.85298	20.00000	Aver	
	14	Ethyl Ether	0.46850	0.54475	0.54475	0.010	16.27564	20.00000	Aver	
	15	Ethanol	0.00787	0.00721	0.00721	0.010	-8.43194	20.00000	Aver	<-
	16	1,1-Dichloroethene	0.93040	1.02887	1.02887	0.010	10.58364	20.00000	Aver	
	17	1,1,2-Trichlorotrifluoroeth	0.44831	0.49826	0.49826	0.010	11.13983	20.00000	Aver	
	18	Carbon Disulfide	1.30241	1.42133	1.42133	0.010	9.97504	20.00000	Aver	
	19	Iodomethane	100	73.08578	0.44167	0.010	-26.91422	20.00000	Line	<-
	20	Acrolein	0.08858	0.09898	0.09898	0.010	11.74431	20.00000	Aver	
	21	Allyl chloride	0.26846	0.25135	0.25135	0.010	-6.72092	20.00000	Aver	
	22	Methylene Chloride	50.00000	53.83586	1.00943	0.010	7.67173	20.00000	Line	
	23	Acetone	0.10353	0.11249	0.11249	0.010	9.79422	20.00000	Aver	
	24	Methyl Acetate	0.07092	0.07814	0.07814	0.010	10.17414	20.00000	Aver	
	25	trans-1,1-Dichloroethene	0.89004	0.98526	0.98526	0.010	10.69816	20.00000	Aver	
	26	Methyl-tert-butyl Ether	50.00000	53.04708	1.39659	0.010	6.09416	20.00000	Line	
	27	n-Hexane	50.00000	45.75060	1.16101	0.010	-8.49840	20.00000	Line	
	28	tert-Butyl Alcohol	500	470	0.07386	0.010	-6.07422	20.00000	Line	
	29	Acetonitrile	0.08448	0.08621	0.08621	0.010	2.04196	20.00000	Aver	
	30	Diisopropyl Ether	2.02252	2.26496	2.26496	0.010	11.97711	20.00000	Aver	
	31	2-Chloro-1,3-Butadiene	50.00000	53.41477	1.25372	0.010	6.82955	20.00000	Line	
	32	1,1-Dichloroethane	1.17398	1.22938	1.22938	0.100	4.71917	20.00000	Aver	
	33	Acrylonitrile	0.30675	0.33237	0.33237	0.010	8.35190	20.00000	Aver	
	34	Ethyl-tert-butyl ether	1.76082	2.03277	2.03277	0.010	15.44466	20.00000	Aver	
	35	Vinyl Acetate	100	112	1.89383	0.010	12.31632	20.00000	Line	
	36	cis-1,2-Dichloroethene	0.91711	0.86736	0.86736	0.010	5.47871	20.00000	Aver	
	37	2,2-Dichloropropane	0.91044	0.87685	0.87685	0.010	8.19417	20.00000	Aver	
	38	Bromochloromethane	0.31773	0.34159	0.34159	0.010	7.50083	20.00000	Aver	
	39	Cyclohexane	1.23463	1.38009	1.38009	0.010	11.78023	20.00000	Aver	
	40	Chloroform	0.92409	0.93067	0.93067	0.010	0.71217	20.00000	Aver	
	41	Ethyl Acetate	0.94513	1.01950	1.01950	0.010	7.86701	20.00000	Aver	
	42	Tetrahydrofuran	0.24861	0.27605	0.27605	0.010	11.03767	20.00000	Aver	
	43	Carbon Tetrachloride	0.46037	0.53434	0.53434	0.010	16.06813	20.00000	Aver	
	44	1,1,1-Trichloroethane	0.83162	0.95050	0.95050	0.010	14.29583	20.00000	Aver	
	45	2-Butanone	100	95.86473	0.33482	0.010	-4.13527	20.00000	Line	
	46	1,1-Dichloropropene	50.00000	50.54886	0.75721	0.010	1.09772	20.00000	Line	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv1.i
Lab File ID: 10011745.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv1.i\100117B.b\8260WLL.m

Injection Date: 02-OCT-2017 03:37
Init. Cal. Date(s): 29-SEP-2017 29-SEP-2017
Init. Cal. Times: 14:50 16:35
Quant Type: ISTD

70.66 ±20

	COMPOUND	RRF / AMOUNT	RF50	TOTAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
47	tert-Butyl Formate	400	413	0.66967	0.010	3.12809	20.00000	Line	
48	Benzene	1.20977	1.32572	1.32572	0.010	9.58401	20.00000	Aver	
49	Propionitrile	0.11082	0.12205	0.12205	0.010	10.13067	20.00000	Aver	
50	Methacrylonitrile	500	486	0.41737	0.010	-2.85874	20.00000	Line	
51	tert-Amylmethyl ether	0.74066	0.80146	0.80146	0.010	8.20800	20.00000	Aver	
52	1,2-Dichloroethane	0.74853	0.81283	0.81283	0.010	8.59806	20.00000	Aver	
53	Isobutanol	1000	912	0.03183	0.010	-8.75102	20.00000	Line	
54	tert-Amyl Alcohol	0.03906	0.04079	0.04079	0.010	7.17481	20.00000	Aver	
55	Methylcyclohexane	0.45152	0.47675	0.47675	0.010	5.58807	20.00000	Aver	
56	Trichloroethene	0.33726	0.37803	0.37803	0.010	12.10946	20.00000	Aver	
57	Dibromomethane	0.30871	0.33379	0.33379	0.010	11.48042	20.00000	Aver	
58	1,2-Dichloropropane	0.37629	0.43089	0.43089	0.010	14.51240	20.00000	Aver	
59	Bromodichloromethane	0.38926	0.43854	0.43854	0.010	12.67612	20.00000	Aver	
60	Methyl methacrylate	0.35446	0.36328	0.36328	0.010	2.48936	20.00000	Aver	
61	1,4-Dioxane	1000	900	0.00224	0.010	-10.03678	20.00000	Line	<-
62	2-Chloroethyl Vinyl Ether	0.18633	0.18576	0.18576	0.010	-0.30585	20.00000	Aver	
63	cis-1,3-Dichloropropene	0.43616	0.48013	0.48013	0.010	10.08012	20.00000	Aver	
64	Toluene	1.22525	1.17849	1.17849	0.010	-3.81664	20.00000	Aver	
65	Tetrachloroethene	1.24662	1.38931	1.38931	0.010	11.44646	20.00000	Aver	
66	4-Methyl-2-Pentanone	0.42243	0.40596	0.40596	0.010	-3.89776	20.00000	Aver	
67	trans-1,3-Dichloropropene	0.39873	0.42995	0.42995	0.010	9.19689	20.00000	Aver	
68	1,1,2-Trichloroethane	0.22810	0.25534	0.25534	0.010	11.93921	20.00000	Aver	
69	Ethyl methacrylate	1.38477	1.45885	1.45885	0.010	5.34980	20.00000	Aver	
70	Dibromochloromethane	50.00000	50.76137	1.25700	0.010	1.52274	20.00000	Line	
71	1,3-Dichloropropane	50.00000	51.37209	1.83699	0.010	2.74413	20.00000	Line	
72	1,2-Dibromoethane	0.93868	1.10325	1.10025	0.010	17.08885	20.00000	Aver	
73	3,3-Dimethyl-1-butanol	0.09961	0.09854	0.09854	0.010	-1.07659	20.00000	Aver	
74	2-Hexanone	1.69743	1.66216	1.66216	0.010	-2.07912	20.00000	Aver	
75	Chlorobenzene	2.82934	2.88035	2.88035	0.300	1.78129	20.00000	Aver	
76	Ethylbenzene	4.89097	4.95627	4.95627	0.010	1.33524	20.00000	Aver	
77	1,1,1,2-Tetrachloroethane	0.92500	1.10175	1.10175	0.300	19.12865	20.00000	Aver	
78	m&p-Xylene	3.67777	3.76273	3.76273	0.010	2.30992	20.00000	Aver	
79	o-Xylene	1.73836	1.77537	1.77537	0.010	2.12927	20.00000	Aver	
80	Styrene	2.90222	3.00776	3.00776	0.010	3.63552	20.00000	Aver	
81	Bromoform	0.70104	0.74050	0.74050	0.100	5.47886	20.00000	Aver	
82	Isopropylbenzene (Cumene)	4.14313	4.12258	4.12258	0.010	-0.49662	20.00000	Aver	
83	cis 1,4-dichloro-2-butene	1.78040	1.73236	1.73236	0.010	-2.69816	20.00000	Aver	(Q)
84	Bromobenzene	0.76914	0.76618	0.76618	0.010	-0.38568	20.00000	Aver	
85	n-Propylbenzene	2.69714	2.76847	2.76847	0.010	2.64463	20.00000	Aver	
86	1,1,2,2-Tetrachloroethane	1.12506	1.17924	1.17924	0.300	4.81662	20.00000	Aver	
87	2-Chlorotoluene	1.71345	1.78257	1.78257	0.010	4.03435	20.00000	Aver	
88	1,3,5-Trimethylbenzene	1.63773	1.66943	1.66943	0.010	2.34763	20.00000	Aver	
89	1,2,3-Trichloropropane	1.03521	1.06666	1.06666	0.010	3.03410	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv1.i
Lab File ID: 10011745.D
Analysis Type: WATER
Lab Sample ID: ccal_6
Method: \\Wt\chem\92msv1.i\100117B.b\8260WLL.m

Injection Date: 02-OCT-2017 03:37
Init. Cal. Date(s): 29-SEP-2017 29-SEP-2017
Init. Cal. Times: 14:50 16:35
Quant Type: ISTD

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS	
90 trans 1,4-Dichloro-2-butene	0.92240	0.72002	0.72002	0.010	-21.94055	20.00000	Aver	(Q)	<-
91 Cyclohexanone	0.24089	0.23881	0.23881	0.010	-0.86111	20.00000	Aver		
92 4-Chlorotoluene	1.74707	1.81431	1.81431	0.010	3.84859	20.00000	Aver		
93 tert-Butylbenzene	1.87170	1.92166	1.92166	0.010	2.66925	20.00000	Aver		
94 Pentachloroethane	0.38298	0.43262	0.43262	0.010	12.99065	20.00000	Aver		
95 1,2,4-Trimethylbenzene	1.74371	1.72922	1.72922	0.010	-0.83095	20.00000	Aver		
96 sec-Butylbenzene	2.04673	2.08878	2.08878	0.010	1.90797	20.00000	Aver		
97 p-Isopropyltoluene	1.73865	1.67194	1.67194	0.010	-3.83698	20.00000	Aver		
98 1,3-Dichlorobenzene	1.15960	1.17549	1.17549	0.010	1.37099	20.00000	Aver		
99 1,4-Dichlorobenzene	1.21632	1.21587	1.21587	0.010	-0.03688	20.00000	Aver		
100 1,2,3-Trimethylbenzene	1.84269	1.89675	1.89675	0.010	2.93417	20.00000	Aver		
101 n-Butylbenzene	1.35302	1.31483	1.31483	0.010	-2.82299	20.00000	Aver		
102 1,2-Dichlorobenzene	1.11915	1.17631	1.17631	0.010	5.10689	20.00000	Aver		
103 1,2-Dibromo-3-Chloropropane	0.25874	0.25659	0.25659	0.010	-0.83323	20.00000	Aver		
104 Hexachloro-1,3-butadiene	0.23453	0.23783	0.23783	0.010	1.40671	20.00000	Aver		
105 1,2,4-Trichlorobenzene	0.58781	0.63092	0.63092	0.010	7.33419	20.00000	Aver		
106 Naphthalene	2.08311	2.16091	2.16091	0.010	3.73462	20.00000	Aver		
107 1,2,3-Trichlorobenzene	0.54911	0.60592	0.60592	0.010	10.34598	20.00000	Aver		

QC Flag Legend

Q - Qualifier signal failed the ratio test.

Average %D / Drift Results.

Calculated Average %D/Drift = 7.6842
Maximum Average %D/Drift = 0.000e+000
* Failed Average %D/Drift Test.

Pace Analytical Services, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: 92msv1.i
Lab File ID: 10011745.D
Lab Smp Id: ccal_6
Analysis Type: VOA
Quant Type: ISTD
Operator: CAH
Method File: \\Wt\chem\92msv1.i\100117B.b\8260WLL.m
Misc Info: ,ccal_6

Calibration Date: 02-OCT-2017
Calibration Time: 03:37
Client Smp ID: ContCal6
Level: LOW
Sample Type: WATER

Test Mode:
Use Last Continuing Calibrator.
If Continuing Cal. use Initial Cal. Level 6

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	238829	119415	477658	230422	-3.52
2 1,4-difluorobenze	364531	182266	729062	348114	-4.50
3 Chlorobenzene-d5	89193	44597	178386	81939	-8.13
4 1,4-Dichlorobenze	134745	67373	269490	124004	-7.97

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	3.96	3.46	4.46	3.96	-0.00
2 1,4-difluorobenze	4.54	4.04	5.04	4.54	-0.00
3 Chlorobenzene-d5	7.16	6.66	7.66	7.16	-0.00
4 1,4-Dichlorobenze	8.47	7.97	8.97	8.47	-0.07

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10011745 Date Analyzed: 10/02/17

Instrument ID: 92MSV1 Time Analyzed: 0337

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 (DFB) AREA #	RT
	12 HOUR STD	81939	7.16	124004	8.47	348114	4.54
	UPPER LIMIT	163878	7.66	248008	8.97	696228	5.04
	LOWER LIMIT	40970	6.66	62002	7.97	174057	4.04
	EPA SAMPLE NO.						
01	MS	75658	7.16	116079	8.47	314428	4.54
02	MS	77475	7.16	121423	8.47	311666	4.54
03	DUP	86680	7.16	117262	8.47	282426	4.54
04	DUP	87497	7.16	127992	8.47	307250	4.54
05							
06							
07							
08							
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17							
18							
19							
20							
21							
22							

N/A Batch QC only

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10011745 Date Analyzed: 10/02/17

Instrument ID: 92MSV1 Time Analyzed: 0337

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	230422	3.96				
	UPPER LIMIT	460844	4.46				
	LOWER LIMIT	115211	3.46				
	EPA SAMPLE NO.						
01	MS	221281	3.96				
02	MS	219489	3.96				
03	DUP	240470	3.96				
04	DUP	231633	3.96				
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA

1/87 Rev.

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv1.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10011744.D bfb		L/,bfb	BFB	1	< 2	BFB	10/02/17	03:20	CAH	
1/10011745.D ccal_6		L/,ccal_6	CCALIB_6	1	< 2	8260WLL	10/02/17	03:37	CAH	
1/10011745bfb.D bfb		L/,bfb	BFB	1	< 2	BFB	10/02/17	03:37	CAH	
1/10011745ccal.D ccal_6		L/,ccal_6	CCALIB_6	1	< 2	8260WLL	10/02/17	03:37	CAH	
1/10011746.D 2107697		L/43378,2107697	LCS	1	< 2	8260WLL	10/02/17	03:55	CAH	
1/10011747.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	04:13	CAH	
1/10011748.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	04:30	CAH	
1/10011749.D 2107696		L/43378,2107696	BLANK	1	< 2	8260WLL	10/02/17	04:48	CAH	
1/10011750.D 92357145001		L/43378,92357145001	SAMPLE	1	< 2	8260WLL	10/02/17	05:06	CAH	
1/10011751.D 92357125011		L/43378,92357125011	SAMPLE	1	< 2	8260WLL	10/02/17	05:23	CAH	
1/10011752.D 92357125012		L/43378,92357125012	SAMPLE	1	< 2	8260WLL	10/02/17	05:41	CAH	
1/10011753.D 92357125013		L/43378,92357125013	SAMPLE	1	< 2	8260WLL	10/02/17	05:58	CAH	
1/10011754.D 92357145002		L/43378,92357145002	SAMPLE	1	< 2	8260WLL	10/02/17	06:16	CAH	
1/10011755.D 92357145003		L/43378,92357145003	SAMPLE	1	< 2	8260WLL	10/02/17	06:34	CAH	
1/10011756.D 92357145004		L/43378,92357145004	SAMPLE	1	< 2	8260WLL	10/02/17	06:51	CAH	
1/10011757.D 92357145005		L/43378,92357145005	SAMPLE	1	< 2	8260WLL	10/02/17	07:09	CAH	
1/10011758.D 92357145006		L/43378,92357145006	SAMPLE	1	< 2	8260WLL	10/02/17	07:27	CAH	
1/10011759.D 92357145007		L/43378,92357145007	SAMPLE	1	< 2	8260WLL	10/02/17	07:44	CAH	
1/10011760.D 92357145008		L/43378,92357145008	SAMPLE	1	< 2	8260WLL	10/02/17	08:02	CAH	
1/10011761.D 92357145009		L/43378,92357145009	SAMPLE	1	< 2	8260WLL	10/02/17	08:20	CAH	
1/10011762.D 92357145010		L/43378,92357145010	SAMPLE	1	< 2	8260WLL	10/02/17	08:38	CAH	
1/10011763.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	08:55	CAH	
1/10011764.D 2107956		L/43301,2107956	DUP	1	7	8260WLL	10/02/17	09:13	CAH	
1/10011765.D ccal_5		L/,ccal_5	LCS	1	7	624	10/02/17	09:30	CAH	
1/10011766.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	09:48	CAH	
1/10011767.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	10:06	CAH	
1/10011768.D 2107934		L/43333,2107934	DUP	1	< 2	8260WLL	10/02/17	10:24	CAH	
1/10011769.D 2107940		L/43333,2107940	DUP	1	7	624	10/02/17	10:41	CAH	
1/10011770.D 2107935		L/43333,2107935	MS	1	< 2	8260WLL	10/02/17	10:59	CAH	
1/10011771.D 2107955		L/43301,2107955	MS	1	< 2	8260WLL	10/02/17	11:17	CAH	
1/10011772.D 2107941		L/43333,2107941	MS	1	< 2	8260WLL	10/02/17	11:34	CAH	
1/10011773.D 2107949		L/43354,2107949	MS	25	< 2	8260WLL	10/02/17	11:52	CAH	
1/10011774.D 2107952		L/43354,2107952	MSD	25	< 2	8260WLL	10/02/17	12:10	CAH	
1/10011775.D cu		L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	12:27	CAH	

Check Maintenance Items Performed:

___ Changed septum
___ Cleaned liner
___ Replaced/Cleaned gold seal
___ Clipped column
___ Changed trap (lot #_____)
___ Cleaned MS source
___ Changed column (lot #_____)
___ Other minor parts replaced _____
___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv1.i\100117B.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 16:42 10/02/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msvl.i
Column RTX-VMS 20m X 0.18mm Helium Method:
Misc. Prep Info [L]:
ISTD lot: Surr. lot:
Tune std: _____ Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10011776.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	12:45	CAH	
1/10011777.D	ms6707-3	L/,ms6707-3	SAMPLE	1	< 2	8260WLL	10/02/17	13:03	CAH	
1/10011778.D	msd6707-3	L/,msd6707-3	SAMPLE	1	< 2	8260WLL	10/02/17	13:21	CAH	
1/10011779.D	ms7132-12	L/,ms7132-12	SAMPLE	1	< 2	8260WLL	10/02/17	13:38	CAH	
1/10011780.D	ms7125-3	L/,ms7125-3	SAMPLE	1	< 2	8260WLL	10/02/17	13:56	CAH	
1/10011781.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	14:14	CAH	
1/10011782.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/02/17	14:31	CAH	
1/10011783.D	dup7125-3	L/,dup7125-3	SAMPLE	1	< 2	8260WLL	10/02/17	14:49	CAH	
1/10011784.D	dup7125-4	L/,dup7125-4	SAMPLE	1	< 2	8260WLL	10/02/17	15:07	CAH	

≤12 hrs

File Path 1: \\Wt\chem\92msvl.i\100117B.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 16:42 10/02/2017 Page: 2

B. SDG 92357284

ENVIRONMENTAL STANDARDS

ORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name:	Kinder Morgan -2017 Fountain Inn DV	Reviewed by:	CMR
Sample Collection Dates:	9/28/17	Approved by:	Alm
Job Number:	20177961.A000	Completion Date:	11/2017
Project Manager:	ALM		
Laboratory:	Pace Carolinas	Applicable Sample No's ( )	Refer to Table 1 in the Quality Assurance Review

			Sample No.	Lab Control No.
Deliverable:	CLP (Full)	( )	92357284	
	Level IV (Full)	(X)		
	Limited	( )		
	Other:			

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail (Check (√) if Yes or Footnote Letter for Comments Below)					Problems Identified (Check (√) if Yes or Footnote Letter for Comments Below)					Support Documentation Attachments (Check (√) if Yes or Footnote Letter for Comments Below)				
	8260					8260					8260				
Holding Times	√										√				
Blank Analysis: Target Cmpds	√										√				
Sys Montr Cmps/Surrogates	√										√				
Matrix Spike/Matrix Spike Duplicate	√										√				
Blank Spike	√										√				
Duplicate Analysis (X) Field ( ) Lab	√										√				
Detection Limit/Sensitivity	√										√				
Qualitative Identification: Target Cmpds	√										√				
Qualitative Identification: TICs															
DFTPP & BFB Mass Tuning	√										√				
GC Instrument Performance															
Initial Calibrations	√										√				
Continuing Calibrations	√										√				
Quantitation of Results	√										√				
DDT/Endrin Breakdown															
Surrogate Retention Time Shifts															
Internal Standards Performance	√										√				
Resolution Check Standards															
Analytical Sequence	√										√				
Florisil Cartridge & GPC Calibration															
GC Column Agreement															
Condition Upon Receipt	√										√				
Percent Solids															
Others:															

Comments:

ENVIRONMENTAL STANDARDS

BLANK ANALYSIS RESULTS FOR ORGANIC PARAMETERS

Fraction (1)	Matrix (Aq., S)	Blank Type (2)	Blank Sample ID	Contaminant	Concentration ug/L	Qualification limit	
						5×	10×
			All 92357284 blanks	None detected			

1 - V = Volatile; S = Semivolatile; P = Pesticide/PCB; O = Other: PFC

2 - MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: No blank qualification necessary

** Columns G and H contains formulas

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Matrix: Water
% Moisture:
Acode: 8260 MSV Low Level SC
Prep/Method: EPA 8260

Sample: EQUIPMENT BLANK SC
Lab ID: 92357284002
Collected: 09/28/17 10:40
Received: 09/29/17 10:23
Analyzed: 10/08/17 13:43
Dilution Factor: 1

Units: ug/L

CAS No.	Parameters	Results	Report Limit	Qual
71-43-2	Benzene	ND	1.0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Matrix: Water
% Moisture:
Acode: 8260 MSV Low Level SC
Prep/Method: EPA 8260

Sample: TRIP BLANK SC
Lab ID: 92357284003
Collected: 09/28/17 00:00
Received: 09/29/17 10:23
Analyzed: 10/08/17 14:01
Dilution Factor: 1

Units: ug/L

CAS No.	Parameters	Results	Report Limit	Qual
71-43-2	Benzene	ND	1.0	

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lab limits

SURROGATE RECOVERY SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch Method: EPA 8260

Analysis Method: EPA 8260

Lab ID	Client Sample ID	Type	Matrix	Dilution	Sur1 % Rec	Sur1 Qual	Sur2 % Rec	Sur2 Qual	Sur3 % Rec	Sur3 Qual	Sur4 % Rec	Sur4 Qual	Sur5 % Rec	Sur5 Qual	Sur6 % Rec	Sur6 Qual
2113660		BLANK	Water	1	98		93		103							
92357284001	TW-11		Water	1	108		90		102							
2113663		DUP	Water	1	101		99		99							
2113661		LCS	Water	1	97		100		99							
2113662		MS	Water	1	100		99		92							
QC Limits:					70-130		70-130		70-130							

Sur 1: 1,2-Dichloroethane-d4 (S)
Sur 2: 4-Bromofluorobenzene (S)
Sur 3: Toluene-d8 (S)

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SURROGATE RECOVERY SUMMARY

lab limits

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373
QC Batch Method: EPA 8260

Analysis Method: EPA 8260

Lab ID	Client Sample ID	Type	Matrix	Dilution	Sur1 % Rec	Sur1 Qual	Sur2 % Rec	Sur2 Qual	Sur3 % Rec	Sur3 Qual	Sur4 % Rec	Sur4 Qual	Sur5 % Rec	Sur5 Qual	Sur6 % Rec	Sur6 Qual
2113616		BLANK	Water	1	100		99		102							
2113619		DUP	Water	1	105		100		101							
92357284002	EQUIPMENT BLANK		Water	1	105		99		102							
2113617		LCS	Water	1	98		104		99							
92357284003	TRIP BLANK		Water	1	106		98		101							
2113618		MS	Water	1	102		103		97							
QC Limits:					70-130		70-130		70-130							

Sur 1: 1,2-Dichloroethane-d4 (S)
Sur 2: 4-Bromofluorobenzene (S)
Sur 3: Toluene-d8 (S)

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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QC SAMPLE SUMMARY

lab limits

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373
QC Batch: Method: EPA 8260
Analysis Method: EPA 8260

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	10/08/17 11:08			**LCSD Prepared:**			**LCSD Analyzed:**		
Benzene	ug/L	99			70-130		50	49.5		

Type	Sample	Matrix
LCS	2113617	Water

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lab limits

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch: Method: EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	10/08/17 11:26			**LCSD Prepared:**			**LCSD Analyzed:**		
Benzene	ug/L	98			70-130		50	49.1		

Type	Sample	Matrix
LCS	2113661	Water

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	10/09/17 15:30		**MSD Prepared:**			**MSD Analyzed:**							
Benzene	ug/L	103			70-130		20		1		ND	20.5		

Type	Sample	Matrix	Client Sample ID
MS	2113618	Water	
Sample	92357782015	Water	N/A

N/A Batch QC
non-project

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	10/09/17 15:47			**MSD Prepared:**			**MSD Analyzed:**						
Benzene	ug/L	107			70-130		20		1		ND	21.4		

Type	Sample	Matrix	Client Sample ID
MS	2113662	Water	
Sample	92357553002	Water	N/A

N/A Batch QC
non-project

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	Dup RPD	QC Limits MAX RPD Dup	Results Sample	Results Dup	Qual
Benzene	ug/L		30	ND	ND	

Type	Sample	Matrix	Client Sample ID
DUP	2113619	Water	
Sample	92357553001	Water	N/A

N/A Batch QC

non-project

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch: Method EPA 8260

Analysis Method: EPA 8260

Analyte	Units	Dup RPD	QC Limits MAX RPD Dup	Results Sample	Results Dup	Qual
Benzene	ug/L		30	ND	ND	

Type	Sample	Matrix	Client Sample ID
DUP	2113663	Water	
Sample	92357762001	Water	N/A

N/A Batch QC
non-project

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381373
QC Batch: Method: EPA 8260
Analysis Method: EPA 8260
Associated Lab Samples: 92357284002, 92357284003

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
71-43-2	Benzene	ND	ug/l	1.0	10/08/17 12:17	

Type	Sample	Matrix
BLANK	2113616	Water

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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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381399
QC Batch: Method: EPA 8260
Associated Lab Samples: 92357284001

Analysis Method: EPA 8260

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
71-43-2	Benzene	ND	ug/L	1.0	10/08/17 12:35	

Type	Sample	Matrix
BLANK	2113660	Water

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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Data File: \\Wt\chem\92msv5.i\100417B.b\10041716.D

Date : 04-OCT-2017 14:06

Client ID: BFB

Instrument: 92msv5.i

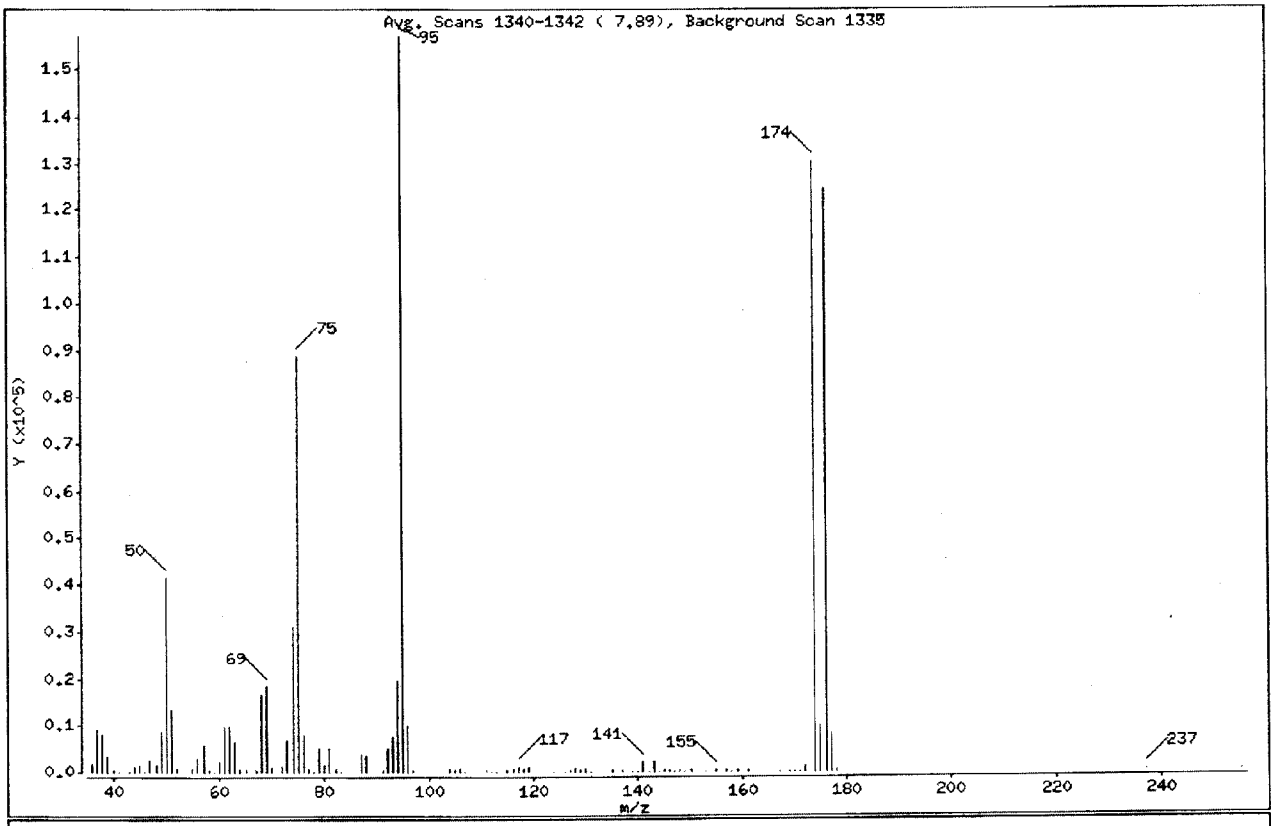
Sample Info: 100417B,8260WLL,CAH,1

Operator: CAH

Column phase: Restek Rtx-VMS

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	26.35
75	30.00 - 60.00% of mass 95	56.59
96	5.00 - 9.00% of mass 95	6.48
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	83.12
175	5.00 - 9.00% of mass 174	6.17 (7.42)
176	95.00 - 101.00% of mass 174	79.30 (95.40)
177	5.00 - 9.00% of mass 176	5.33 (6.72)

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 04-OCT-2017 14:40
End Cal Date : 04-OCT-2017 16:23
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Last Edit : 04-Oct-2017 16:52 92msv5.i

Benzene only

Calibration File Names:
Level 02: all \\Wt\chem\92msv5.i\100417B.b\10041718.D
Level 03: all \\Wt\chem\92msv5.i\100417B.b\10041719.D
Level 04: all \\Wt\chem\92msv5.i\100417B.b\10041720.D
Level 05: all \\Wt\chem\92msv5.i\100417B.b\10041721.D
Level 06: all \\Wt\chem\92msv5.i\100417B.b\10041722.D
Level 07: all \\Wt\chem\92msv5.i\100417B.b\10041723.D
Level 08: all \\Wt\chem\92msv5.i\100417B.b\10041724.D

Compound (all.sb)	1.0000 Level 2	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
	200.0000 Level 8										
8 Dichlorodifluoromethane	4236	12154	39728	78006	218455	457068					
	392216						LINR	-0.01041	0.60966		0.99973
9 Chloromethane	0.66159	0.69584	0.68587	0.63776	0.65030	0.62520					
	0.66617						AVRG		0.66039		3.80716
10 Vinyl Chloride	0.46270	0.36695	0.43175	0.42618	0.45569	0.45961					
	0.51510						AVRG		0.44543		10.11345
11 Bromomethane	0.13697	0.14004	0.13253	0.15287	0.16984	0.19149					
	+++++						AVRG		0.15729		12.96721

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 04-OCT-2017 14:40
End Cal Date : 04-OCT-2017 16:23
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Last Edit : 04-Oct-2017 16:52 92msv5.i

>0.05

≤15

Compound (all.sp)	1.0000 Level 2 / 200.0000 Level 8	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m	m2	%RSD or RCD
47 tert-Butyl Formate	+++++ / 0.62417	0.51425	0.54175	0.58714	0.59006	0.60139	AVRG		0.57713		7.05198
48 Benzene	1.06167 / 1.03172	1.01763	1.03863	1.07274	1.07748	1.00469	AVRG		1.03637		2.30510
49 Propionitrile	0.09828 / 0.08439	0.08656	0.08765	0.08859	0.08558	0.08710	AVRG		0.08918		4.78764
50 Methacrylonitrile	0.36911 / 0.36557	0.38522	0.38558	0.40456	0.42746	0.37110	AVRG		0.38623		5.81002
51 tert-Amylmethyl ether	0.89700 / 0.91765	0.87472	0.90906	0.95952	0.90137	0.90773	AVRG		0.91243		3.83609
52 1,2-Dichloroethane	1.05845 / 0.81770	0.89253	0.88366	0.90035	0.85776	0.80891	AVRG		0.88762		9.46382
53 Isobutanol	+++++ / 0.03243	0.03077	0.03029	0.03236	0.03047	0.03184	AVRG		0.03119		3.95836

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 04-OCT-2017 14:40
End Cal Date : 04-OCT-2017 16:23
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Last Edit : 04-Oct-2017 16:52 92msv5.i

Compound (all.sr)	1.0000 Level 2	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m	m2	%RSD or R^2
	200.0000 Level 8										
103 1,2-Dibromo-3-Chloropropane	0.25749	0.23186	0.23568	0.25554	0.24061	0.23035					
	0.23470						AVRG		0.24089		4.63611
104 Hexachloro-1,3-butadiene	0.35680	0.38224	0.36139	0.38576	0.35065	0.33079					
	0.33217						AVRG		0.35711		6.07929
105 1,2,4-Trichlorobenzene	0.79476	0.78487	0.79943	0.81254	0.77951	0.74799					
	0.76241						AVRG		0.78450		3.13131
106 Naphthalene	2.13565	2.09918	2.31614	2.53012	2.35668	2.26973					
	2.31718						AVRG		2.28938		6.27595
107 1,2,3-Trichlorobenzene	0.81662	0.72440	0.76558	0.78058	0.70858	0.68719					
	0.67617						AVRG		0.73730		7.11765
$ 5 1,2-Dichloroethane-d4 (S)	0.79495	0.79648	0.78792	0.79384	0.78307	0.75250					
	0.76938						AVRG		0.78216		2.07851
$ 6 Toluene-d8 (S)	1.21084	1.15843	1.17116	1.17876	1.16456	1.15110					
	1.15945						AVRG		1.17061		1.69963

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 04-OCT-2017 14:40
End Cal Date : 04-OCT-2017 16:23
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Last Edit : 04-Oct-2017 16:52 92msv5.i

Compound (all.sb)	1.0000 Level 2	5.0000 Level 3	10.0000 Level 4	20.0000 Level 5	50.0000 Level 6	100.0000 Level 7	Curve	Coefficients b	m1	m2	%RSD or R^2
	200.0000 Level 8										
$ 7 4-Bromofluorobenzene (S)	1.64333	1.63045	1.69392	1.61641	1.76081	1.82776					
	1.85059						AVRG		1.71904		5.50139

Pace Analytical Services, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 04-OCT-2017 14:40
End Cal Date : 04-OCT-2017 16:23
Quant Method : ISTD
Target Version : RC10A
Integrator : HP RTE
Method file : \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Last Edit : 04-Oct-2017 16:52 92msv5.i

Average %RSD Results.

Calculated Average %RSD = 5.17659
Maximum Average %RSD = 0.000e+000
* Failed Average %RSD Test.

Curve	Formula	Units
Averaged	Amt = Rsp/m1	Response
Linear	Amt = b + m1*Rsp	Amount
Quad	Rsp = b + m1*Amt + m2*Amt^2	Amount

Pace Analytical Services, Inc.

RECOVERY REPORT

Client Name:
Sample Matrix: Liquid
Lab Smp Id: ICV
Level: LOW
Data Type: MS DATA
SpikeList File: ICV.spk
Sublist File: all.sub
Method File: \\Wt\chem\92msv5.i\100417B.b\8260WLL.m
Misc Info: ,ICV

Client SDG: SDGa27970
Fraction: VOA

Operator: CAH
SampleType: ICV
Quant Type: ISTD

Benzene only
80-120%

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
8 Dichlorodifluorome	50.0	45.6	91.24	70-130
9 Chloromethane	50.0	53.7	107.49	70-130
10 Vinyl Chloride	50.0	54.9	109.87	70-130
11 Bromomethane	50.0	62.4	124.87	70-130
12 Chloroethane	50.0	54.2	108.44	70-130
13 Trichlorofluoromet	50.0	48.5	97.01	70-130
14 Ethyl Ether	50.0	51.8	103.58	70-130
15 Ethanol	2000	2170	108.50	70-130
16 1,1-Dichloroethene	50.0	47.9	95.81	70-130
17 1,1,2-Trichlorotri	50.0	48.6	97.19	70-130
18 Carbon Disulfide	50.0	51.5	102.95	70-130
19 Iodomethane	100	93.0	93.00	70-130
20 Acrolein	250	372	149.02*	70-130
21 Allyl chloride	50.0	53.2	106.36	70-130
22 Methylene Chloride	50.0	49.0	98.07	70-130
23 Acetone	100	108	107.96	70-130
24 Methyl Acetate	50.0	56.4	112.71	70-130
25 trans-1,2-Dichloro	50.0	51.0	102.05	70-130
26 Methyl-tert-butyl	50.0	49.2	98.46	70-130
27 n-Hexane	50.0	49.2	98.36	70-130
28 tert-Butyl Alcohol	500	485	97.10	70-130
29 Acetonitrile	500	513	102.56	70-130
30 Diisopropyl Ether	50.0	51.5	103.05	70-130
31 2-Chloro-1,3-Butad	50.0	48.6	97.23	70-130
32 1,1-Dichloroethane	50.0	49.0	98.00	70-130
33 Acrylonitrile	250	261	104.45	70-130
34 Ethyl-tert-butyl e	100	100	100.47	70-130
35 Vinyl Acetate	100	105	104.80	70-130
36 cis-1,2-Dichloroet	50.0	52.1	104.28	70-130
37 2,2-Dichloropropan	50.0	47.8	95.53	70-130
38 Bromochloromethane	50.0	50.2	100.33	70-130
39 Cyclohexane	50.0	51.8	103.62	70-130
40 Chloroform	50.0	51.3	102.60	70-130
41 Ethyl Acetate	100	99.9	99.94	70-130
42 Tetrahydrofuran	500	501	100.18	70-130
43 Carbon Tetrachlori	50.0	45.1	90.13	70-130
44 1,1,1-Trichloroeth	50.0	46.6	93.17	70-130
45 2-Butanone	100	101	100.82	70-130
46 1,1-Dichloropropen	50.0	50.0	99.93	70-130
47 tert-Butyl Formate	400	406	101.49	70-130

SPIKE	COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
48	Benzene	50.0	50.6	101.19	70-130
49	Propionitrile	500	514	102.88	70-130
50	Methacrylonitrile	500	480	95.93	70-130
51	tert-Amylmethyl et	100	99.0	99.03	70-130
52	1,2-Dichloroethane	50.0	44.0	87.96	70-130
53	Isobutanol	1000	1060	106.12	70-130
54	tert-Amyl Alcohol	1000	1040	104.03	70-130
55	Methylcyclohexane	50.0	47.6	95.31	70-130
56	Trichloroethene	50.0	50.1	100.18	70-130
57	Dibromomethane	50.0	47.1	94.28	70-130
58	1,2-Dichloropropan	50.0	49.7	99.38	70-130
59	Bromodichlorometha	50.0	45.5	91.04	70-130
60	Methyl methacrylat	50.0	48.7	97.43	70-130
61	1,4-Dioxane	1000	1280	127.62	70-130
62	2-Chloroethyl Viny	100	113	113.37	70-130
63	cis-1,3-Dichloropr	50.0	51.5	102.98	70-130
64	Toluene	50.0	50.3	100.56	70-130
65	Tetrachloroethene	50.0	47.1	94.21	70-130
66	4-Methyl-2-Pentano	100	94.8	94.78	70-130
67	trans-1,3-Dichloro	50.0	48.3	96.60	70-130
68	1,1,2-Trichloroeth	50.0	47.8	95.61	70-130
69	Ethyl methacrylate	50.0	49.0	97.96	70-130
70	Dibromochlorometha	50.0	50.5	100.94	70-130
71	1,3-Dichloropropan	50.0	51.0	102.04	70-130
72	1,2-Dibromoethane	50.0	51.7	103.35	70-130
73	3,3-Dimethyl-1-but	1000	1100	110.31	70-130
74	2-Hexanone	100	99.9	99.86	70-130
75	Chlorobenzene	50.0	49.1	98.13	70-130
76	Ethylbenzene	50.0	50.0	100.09	70-130
77	1,1,1,2-Tetrachlor	50.0	48.4	96.80	70-130
78	m&p-Xylene	100	98.9	98.87	70-130
79	o-Xylene	50.0	50.6	101.18	70-130
80	Styrene	50.0	52.9	105.83	70-130
81	Bromoform	50.0	48.9	97.87	70-130
82	Isopropylbenzene (	50.0	50.7	101.43	70-130
83	cis 1,4-dichloro-2	50.0	50.1	100.12	70-130
84	Bromobenzene	50.0	48.9	97.73	70-130
85	n-Propylbenzene	50.0	48.8	97.50	70-130
86	1,1,2,2-Tetrachlor	50.0	50.4	100.91	70-130
87	2-Chlorotoluene	50.0	50.1	100.16	70-130
88	1,3,5-Trimethylben	50.0	49.4	98.88	70-130
89	1,2,3-Trichloropro	50.0	51.1	102.12	70-130
90	trans 1,4-Dichloro	50.0	55.7	111.39	70-130
91	Cyclohexanone	2500	2940	117.53	70-130
92	4-Chlorotoluene	50.0	50.0	99.95	70-130
93	tert-Butylbenzene	50.0	40.5	80.93	70-130
95	1,2,4-Trimethylben	50.0	50.4	100.88	70-130
96	sec-Butylbenzene	50.0	49.5	98.98	70-130
97	p-Isopropyltoluene	50.0	50.1	100.28	70-130
98	1,3-Dichlorobenzen	50.0	48.2	96.41	70-130
99	1,4-Dichlorobenzen	50.0	49.1	98.12	70-130
100	1,2,3-Trimethylben	50.0	48.9	97.82	70-130
101	n-Butylbenzene	50.0	49.9	99.80	70-130
102	1,2-Dichlorobenzen	50.0	49.0	97.98	70-130

SPIKE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
103 1,2-Dibromo-3-Chlo	50.0	49.9	99.88	70-130
104 Hexachloro-1,3-but	50.0	49.9	99.85	70-130
105 1,2,4-Trichloroben	50.0	51.0	101.95	70-130
106 Naphthalene	50.0	55.4	110.88	70-130
107 1,2,3-Trichloroben	50.0	49.9	99.73	70-130

SURROGATE COMPOUND	CONC ADDED ug/L	CONC RECOVERED ug/L	% RECOVERED	LIMITS
$ 5 1,2-Dichloroethane	50.0	47.4	94.84	70-130
$ 6 Toluene-d8 (S)	50.0	51.5	103.05	70-130
$ 7 4-Bromofluorobenze	50.0	50.5	101.02	70-130

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10041700.D		L/	SAMPLE	1	< 2	6200B	10/			
1/10041701.D	prime	L/,prime	BFB	1	< 2	6200B	10/04/17	09:00	SWB	
1/10041702.D	bfb	L/,bfb	BFB	1	< 2	6200B	10/04/17	09:47	SWB	
1/10041703.D	bfb	L/,bfb	BFB	1	< 2	6200B	10/04/17	10:04	SWB	
1/10041704.D	ccal_6	L/,ccal_6	CCALIB_6	1	< 2	6200B	10/04/17	10:21	SWB	
1/10041706.D	systemcheck	L/,systemcheck	BFB	1	< 2	6200B	10/04/17	11:14	SWB	
1/10041707.D	systemcheck	L/,systemcheck	BFB	1	< 2	6200B	10/04/17	11:31	SWB	
1/10041708.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	10/04/17	11:49	SWB	
1/10041709.D	systemcheck	L/,systemcheck	BFB	1	< 2	6200B	10/04/17	12:06	SWB	
1/10041710.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	10/04/17	12:23	SWB	
1/10041711.D	systemcheck	L/,systemcheck	BFB	1	< 2	6200B	10/04/17	12:40	SWB	
1/10041712.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	10/04/17	12:58	SWB	
1/10041713.D	systemcheck	L/,systemcheck	BFB	1	< 2	6200B	10/04/17	13:15	SWB	
1/10041714.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	10/04/17	13:32	SWB	
1/10041715.D	systemcheck	L/,systemcheck	SAMPLE	1	< 2	6200B	10/04/17	13:49	SWB	
1/10041716.D	bfb	L/,bfb	BFB	1	< 2	BFB	10/04/17	14:06	CAH	
1/10041717.D	ical_1	L/,ical_1	CALIB_1	1	< 2	8260WLL	10/04/17	14:23	CAH	
1/10041718a.D	ical_1	L/,ical_1	CALIB_1	1	< 2	6200B	10/04/17	14:23	CAH	
1/10041718.D	ical_2	L/,ical_2	CALIB_2	1	< 2	8260WLL	10/04/17	14:40	CAH	
1/10041718a.D	ical_2	L/,ical_2	CALIB_2	1	< 2	6200B	10/04/17	14:40	CAH	
1/10041719.D	ical_3	L/,ical_3	CALIB_3	1	< 2	8260WLL	10/04/17	14:58	CAH	
1/10041719a.D	ical_3	L/,ical_3	CALIB_3	1	< 2	6200B	10/04/17	14:58	CAH	
1/10041720.D	ical_4	L/,ical_4	CALIB_4	1	< 2	8260WLL	10/04/17	15:15	CAH	
1/10041720a.D	ical_4	L/,ical_4	CALIB_4	1	< 2	6200B	10/04/17	15:15	CAH	
1/10041721.D	ical_5	L/,ical_5	CALIB_5	1	< 2	8260WLL	10/04/17	15:32	CAH	
1/10041721a.D	ical_5	L/,ical_5	CALIB_5	1	< 2	6200B	10/04/17	15:32	CAH	
1/10041722.D	ical_6	L/,ical_6	CALIB_6	1	< 2	8260WLL	10/04/17	15:49	CAH	
1/10041722a.D	ical_6	L/,ical_6	CALIB_6	1	< 2	6200B	10/04/17	15:49	CAH	
1/10041723.D	ical_7	L/,ical_7	CALIB_7	1	< 2	8260WLL	10/04/17	16:06	CAH	
1/10041723a.D	ical_7	L/,ical_7	CALIB_7	1	< 2	6200B	10/04/17	16:06	CAH	
1/10041724.D	ical_8	L/,ical_8	CALIB_8	1	< 2	8260WLL	10/04/17	16:23	CAH	
1/10041724a.D	ical_8	L/,ical_8	CALIB_8	1	< 2	6200B	10/04/17	16:23	CAH	
1/10041725.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/04/17	16:41	CAH	
1/10041726.D	ICV	L/,ICV	ICV	1	< 2	8260WLL	10/04/17	16:58	CAH	✓ L12 hrs

Check Maintenance Items Performed:

- ___ Changed septum
- ___ Cleaned line:
- ___ Replaced/Cleaned gold seal
- ___ Clipped column
- ___ Changed trap (lot #_____)
- ___ Cleaned MS source
- ___ Changed column (lot #_____)
- ___ Other minor parts replaced _____
- ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv5.i\100417B.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 09:01 10/05/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:
Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10041726icv.D	ICV	L/,ICV	ICV	1	< 2	6200B	10/04/17	16:58	CAH	
1/10041727.D	2110458	L/43412,2110458	LCS	1	< 2	6200B	10/04/17	17:15	SWB	
1/10041728.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/04/17	17:32	CAH	
1/10041729.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/04/17	17:49	CAH	
1/10041730.D	2110457	L/43412,2110457	BLANK	1	< 2	6200B	10/04/17	18:06	SWB	
1/10041731.D	92356521002	L/43412,92356521002	SAMPLE	40	< 2	6200B	10/04/17	18:23	SWB	
1/10041732.D	92356888001	L/43412,92356888001	SAMPLE	4	< 2	6200B	10/04/17	18:40	SWB	
1/10041733.D	92356447005	L/43412,92356447005	SAMPLE	10	< 2	6200B	10/04/17	18:57	SWB	
1/10041734.D	92356447005	L/43412,92356447005	SAMPLE	50	< 2	6200B	10/04/17	19:15	SWB	
1/10041735.D	92356447005	L/43412,92356447005	SAMPLE	100	< 2	6200B	10/04/17	19:32	SWB	
1/10041736.D	2110459	L/,2110459	MS	40	< 2	6200B	10/04/17	19:49	SWB	
1/10041737.D	2110460	L/,2110460	MSD	40	< 2	6200B	10/04/17	20:06	SWB	

File Path 1: \\Wt\chem\92msv5.i\100417B.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 09:01 10/05/2017

Data File: \\Wt\chem\92msv5.i\100817A.b\10081701.D

Date : 08-OCT-2017 10:34

Client ID: BFB

Instrument: 92msv5.i

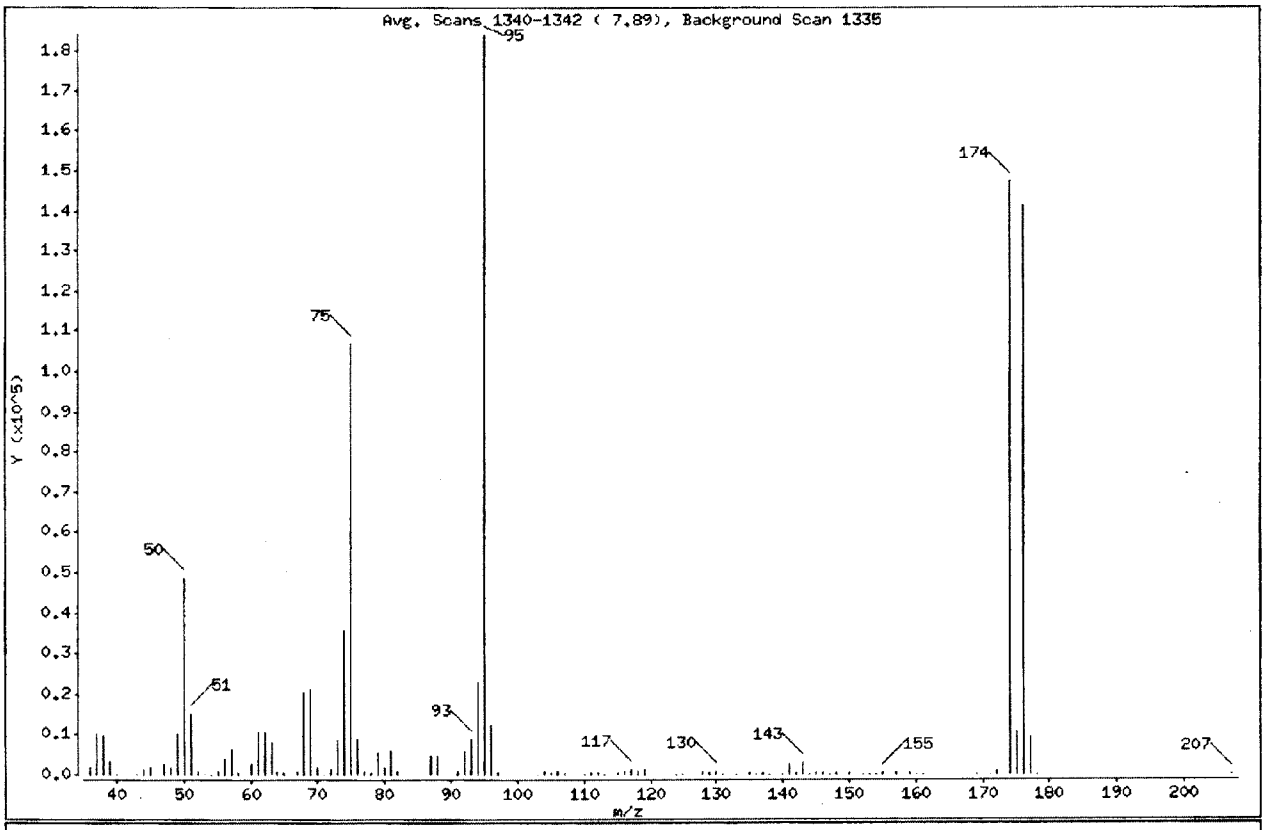
Sample Info: 100817A,8260wll,CAH,1

Operator: CAH

Column phase: Restek Rtx-VMS

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	26.36
75	30.00 - 60.00% of mass 95	57.96
96	5.00 - 9.00% of mass 95	6.69
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	80.07
175	5.00 - 9.00% of mass 174	5.83 (7.29)
176	95.00 - 101.00% of mass 174	76.84 (95.97)
177	5.00 - 9.00% of mass 176	5.00 (6.51)

Data File: \\Wt\chem\92msv5.i\100817A.b\10081702.D
Report Date: 08-Oct-2017 16:23

Benzene only

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i
Lab File ID: 10081702.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv5.i\100817A.b\8260wll.m

Injection Date: 08-OCT-2017 10:51
Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Init. Cal. Times: 14:40 16:23
Quant Type: ISTD

	COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
$	5 1,2-Dichloroethane-d4 (S)	0.78216	0.78216	0.78216	0.010	-2.55711	20.00000	Aver	
$	6 Toluene-d8 (S)	1.17061	1.15832	1.15832	0.010	-1.05027	20.00000	Aver	
$	7 4-Bromofluorobenzene (S)	1.71904	1.74349	1.74349	0.010	1.42223	20.00000	Aver	
	8 Dichlorodifluoromethane	50.00000	49.58812	0.54546	0.010	-8.82377	20.00000	Line	
	9 Chloromethane	0.66039	0.53487	0.53487	0.100	-19.00660	20.00000	Aver	
	10 Vinyl Chloride	0.44543	0.43024	0.43024	0.010	-3.40020	20.00000	Aver	
	11 Bromomethane	0.15729	0.15709	0.15709	0.010	-0.12890	20.00000	Aver	
	12 Chloroethane	0.26789	0.24016	0.24016	0.010	-10.34740	20.00000	Aver	
	13 Trichlorofluoromethane	0.73914	0.76157	0.76157	0.010	3.03554	20.00000	Aver	
	14 Ethyl Ether	0.37424	0.36159	0.36159	0.010	-3.38144	20.00000	Aver	
	15 Ethanol	2000	1805	0.00328	0.010	-9.75843	20.00000	Line	<-
	16 1,1-Dichloroethene	0.71167	0.69404	0.69404	0.010	-2.47838	20.00000	Aver	
	17 1,1,2-Trichlorotrifluoroeth	0.32849	0.34040	0.34040	0.010	3.62707	20.00000	Aver	
	18 Carbon Disulfide	0.84727	0.80127	0.80127	0.010	-5.42997	20.00000	Aver	
	19 Iodomethane	100	101	0.24110	0.010	1.07245	20.00000	Quad	
	20 Acrolein	0.06400	0.05291	0.05281	0.010	-17.50720	20.00000	Aver	
	21 Allyl chloride	0.17048	0.16500	0.16500	0.010	-3.21610	20.00000	Aver	
	22 Methylene Chloride	50.00000	48.35839	1.66190	0.010	-3.28722	20.00000	Line	
	23 Acetone	0.17164	0.16203	0.16205	0.010	-5.59446	20.00000	Aver	
	24 Methyl Acetate	0.06142	0.05669	0.05669	0.010	-7.70426	20.00000	Aver	
	25 trans-1,2-Dichloroethene	0.69585	0.67769	0.67769	0.010	-2.61006	20.00000	Aver	
	26 Methyl-tert-butyl Ether	1.34673	1.29944	1.29944	0.010	-3.51543	20.00000	Aver	
	27 n-Hexane	0.93914	0.88438	0.88438	0.010	-5.83034	20.00000	Aver	
	28 tert-Butyl Alcohol	0.09192	0.07784	0.07784	0.010	-15.32039	20.00000	Aver	
	29 Acetonitrile	0.05350	0.04653	0.04653	0.010	-13.02699	20.00000	Aver	
	30 Diisopropyl Ether	1.80588	1.73397	1.73397	0.010	-3.98181	20.00000	Aver	
	31 2-Chloro-1,3-Butadiene	0.98311	0.96850	0.96850	0.010	-1.09423	20.00000	Aver	
	32 1,1-Dichloroethane	0.86859	0.82583	0.82583	0.100	-4.59307	20.00000	Aver	
	33 Acrylonitrile	0.21915	0.19934	0.19934	0.010	-9.04324	20.00000	Aver	
	34 Ethyl-tert-butyl ether	1.73670	1.74433	1.74433	0.010	0.43908	20.00000	Aver	
	35 Vinyl Acetate	1.41408	1.42630	1.42630	0.010	0.84961	20.00000	Aver	
	36 cis-1,2-Dichloroethene	0.70140	0.68612	0.68612	0.010	-2.17845	20.00000	Aver	
	37 2,2-Dichloropropane	0.80473	0.79146	0.79146	0.010	-1.65133	20.00000	Aver	
	38 Bromochloromethane	0.25250	0.23683	0.23683	0.010	-6.20780	20.00000	Aver	
	39 Cyclohexane	0.81640	0.81009	0.81009	0.010	-0.78050	20.00000	Aver	
	40 Chloroform	50.00000	48.25314	0.75953	0.010	-3.49352	20.00000	Line	
	41 Ethyl Acetate	0.85794	0.78774	0.78774	0.010	-8.18288	20.00000	Aver	
	42 Tetrahydrofuran	0.21118	0.19352	0.19352	0.010	-8.35916	20.00000	Aver	
	43 Carbon Tetrachloride	0.54578	0.54230	0.54230	0.010	-0.63869	20.00000	Aver	
	44 1,1,1-Trichloroethane	0.85796	0.83749	0.83749	0.010	-2.38583	20.00000	Aver (M)	
	45 2-Butanone	0.30065	0.26508	0.26508	0.010	-11.83189	20.00000	Aver	
	46 1,1-Dichloropropene	0.57394	0.56462	0.56462	0.010	-1.45131	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i
Lab File ID: 10081702.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv5.i\100817A.b\8260wll.m

Injection Date: 08-OCT-2017 10:51
Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Init. Cal. Times: 14:40 16:23
Quant Type: ISTD

70.05 120

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
47 tert-Butyl Formate	0.57713	0.57209	0.57209	0.010	-0.87331	20.00000	Aver	
48 Benzene	1.03637	1.04100	1.04100	0.010	0.44714	20.00000	Aver	
49 Propionitrile	0.08913	0.08182	0.08182	0.010	-8.24858	20.00000	Aver	
50 Methacrylonitrile	0.38623	0.35551	0.35551	0.010	-7.95349	20.00000	Aver	
51 tert-Amylmethyl ether	0.91243	0.92311	0.92311	0.010	1.17058	20.00000	Aver	
52 1,2-Dichloroethane	0.88762	0.81469	0.81469	0.010	-8.21623	20.00000	Aver	
53 Isobutanol	0.03219	0.02816	0.02816	0.010	-9.73291	20.00000	Aver	
54 tert-Amyl Alcohol	0.04939	0.04637	0.04637	0.010	-6.11566	20.00000	Aver	
55 Methylcyclohexane	0.41261	0.41130	0.41130	0.010	-0.31673	20.00000	Aver	
56 Trichloroethene	0.28373	0.29136	0.29136	0.010	2.68242	20.00000	Aver	
57 Dibromomethane	0.19555	0.19399	0.19399	0.010	-0.80061	20.00000	Aver	
58 1,2-Dichloropropane	0.32532	0.32222	0.32222	0.010	-0.95318	20.00000	Aver	
59 Bromodichloromethane	0.48283	0.46301	0.46301	0.010	-4.10819	20.00000	Aver	
60 Methyl methacrylate	0.40569	0.40774	0.40774	0.010	0.50598	20.00000	Aver	
61 1,4-Dioxane	0.00157	0.00146	0.00146	0.010	-7.03109	20.00000	Aver	<-
62 2-Chloroethyl Vinyl Ether	0.19520	0.20090	0.20090	0.010	2.91766	20.00000	Aver	
63 cis-1,3-Dichloropropene	0.48521	0.49645	0.49645	0.010	2.31708	20.00000	Aver	
64 Toluene	1.17267	1.16894	1.16894	0.010	-0.31845	20.00000	Aver	
65 Tetrachloroethene	1.12012	1.10481	1.10481	0.010	-1.36676	20.00000	Aver	
66 4-Methyl-2-Pentanone	0.48270	0.46184	0.46184	0.010	-4.32055	20.00000	Aver	
67 trans-1,3-Dichloropropene	0.51288	0.51678	0.51678	0.010	0.75948	20.00000	Aver	
68 1,1,2-Trichloroethane	0.25549	0.25100	0.25100	0.010	-1.75626	20.00000	Aver	
69 Ethyl methacrylate	1.50360	1.55292	1.55292	0.010	3.28059	20.00000	Aver	
70 Dibromochloromethane	1.26284	1.21352	1.21352	0.010	-3.90570	20.00000	Aver	
71 1,3-Dichloropropane	1.68163	1.66891	1.66891	0.010	-0.75988	20.00000	Aver	
72 1,2-Dibromoethane	0.99572	1.01418	1.01418	0.010	1.85016	20.00000	Aver	
73 3,3-Dimethyl-1-butanol	0.10160	0.09666	0.09666	0.010	-4.86663	20.00000	Aver	
74 2-Hexanone	1.68558	1.62447	1.62447	0.010	-3.62554	20.00000	Aver	
75 Chlorobenzene	2.90593	2.83779	2.83779	0.300	-2.34496	20.00000	Aver	
76 Ethylbenzene	5.04004	5.08805	5.08805	0.010	0.95271	20.00000	Aver	
77 1,1,1,2-Tetrachloroethane	1.18993	1.20022	1.20022	0.300	0.86444	20.00000	Aver	
78 m&p-Xylene	3.96207	4.03264	4.03264	0.010	1.78117	20.00000	Aver	
79 o-Xylene	1.78645	1.82498	1.82498	0.010	2.15114	20.00000	Aver	
80 Styrene	2.96559	3.17532	3.17532	0.010	6.96378	20.00000	Aver	
81 Bromoform	0.87088	0.71269	0.71269	0.100	-18.18422	20.00000	Aver	
82 Isopropylbenzene (Cumene)	4.43106	4.67455	4.67455	0.010	5.49510	20.00000	Aver	
83 cis 1,4-dichloro-2-butene	2.43565	2.42322	2.42322	0.010	-0.42872	20.00000	Aver	(Q)
84 Bromobenzene	0.73194	0.72148	0.72148	0.010	-1.42947	20.00000	Aver	
85 n-Propylbenzene	2.99508	2.94153	2.94153	0.010	-1.78790	20.00000	Aver	
86 1,1,2,2-Tetrachloroethane	1.33387	1.33250	1.33250	0.300	-0.10299	20.00000	Aver	
87 2-Chlorotoluene	2.05963	2.07183	2.07183	0.010	0.59267	20.00000	Aver	
88 1,3,5-Trimethylbenzene	2.31923	2.32386	2.32386	0.010	0.19943	20.00000	Aver	
89 1,2,3-Trichloropropane	1.27108	1.29556	1.29556	0.010	1.92566	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i Injection Date: 08-OCT-2017 10:51
Lab File ID: 10081702.D Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Analysis Type: WATER Init. Cal. Times: 14:40 16:23
Lab Sample ID: ccal_6 Quant Type: ISTD
Method: \\Wt\chem\92msv5.i\100817A.b\8260wll.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
90 trans 1,4-Dichloro-2-butene	1.13537	0.98735	0.98735	0.010	-13.03681	20.00000	Aver	
91 Cyclohexanone	0.24305	0.19386	0.19386	0.010	-20.23579	20.00000	Aver	*-
92 4-Chlorotoluene	2.20458	2.21414	2.21414	0.010	0.43329	20.00000	Aver	
93 tert-Butylbenzene	2.19676	2.26998	2.26998	0.010	3.33325	20.00000	Aver	
94 Pentachloroethane	0.49532	0.51077	0.51077	0.010	3.12058	20.00000	Aver	
95 1,2,4-Trimethylbenzene	2.45127	2.51601	2.51601	0.010	2.64101	20.00000	Aver	
96 sec-Butylbenzene	2.44241	2.52228	2.52228	0.010	3.27007	20.00000	Aver	
97 p-Isopropyltoluene	2.32148	2.33363	2.33363	0.010	5.04828	20.00000	Aver	
98 1,3-Dichlorobenzene	1.35831	1.35374	1.35374	0.010	-0.33698	20.00000	Aver	
99 1,4-Dichlorobenzene	1.41202	1.39562	1.39562	0.010	-1.16084	20.00000	Aver	
100 1,2,3-Trimethylbenzene	2.73113	2.78896	2.78896	0.010	2.48243	20.00000	Aver	
101 n-Butylbenzene	1.86844	1.96637	1.96637	0.010	5.24108	20.00000	Aver	
102 1,2-Dichlorobenzene	1.34154	1.37503	1.37503	0.010	2.47379	20.00000	Aver	
103 1,2-Dibromo-3-Chloropropane	0.24089	0.22685	0.22685	0.010	-5.82754	20.00000	Aver	
104 Hexachloro-1,3-butadiene	0.35711	0.34703	0.34703	0.010	-2.82427	20.00000	Aver	
105 1,2,4-Trichlorobenzene	0.78450	0.79617	0.79617	0.010	1.48766	20.00000	Aver	
106 Naphthalene	1.28939	2.40032	2.40032	0.010	4.84581	20.00000	Aver	
107 1,2,3-Trichlorobenzene	0.73730	0.71440	0.71440	0.010	-3.10583	20.00000	Aver	

QC Flag Legend

Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.

Average %D / Drift Results.

*Calculated Average %D/Drift = 4.15632
Maximum Average %D/Drift = 0.000e+000
* Failed Average %D/Drift Test.

Pace Analytical Services, Inc.

INTERNAL STANDARD COMPOUNDS
AREA AND RT SUMMARY

Instrument ID: 92msv5.i
Lab File ID: 10081702.D
Lab Smp Id: ccal_6
Analysis Type: VOA
Quant Type: ISTD
Operator: CAH
Method File: \\Wt\chem\92msv5.i\100817A.b\8260wll.m
Misc Info: ,ccal_6

Calibration Date: 08-OCT-2017
Calibration Time: 10:51
Client Smp ID: ContCal6
Level: LOW
Sample Type: WATER

Test Mode:
Use Last Continuing Calibrator.
If Continuing Cal. use Initial Cal. Level 6

COMPOUND	STANDARD	AREA LIMIT LOWER	AREA LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	358368	179184	716736	386284	7.79
2 1,4-difluorobenze	486553	243277	973106	517455	6.35
3 Chlorobenzene-d5	132457	66229	264914	141003	6.45
4 1,4-Dichlorobenze	230069	115035	460138	247778	7.70

COMPOUND	STANDARD	RT LIMIT LOWER	RT LIMIT UPPER	SAMPLE	%DIFF
1 Pentafluorobenzen	3.99	3.49	4.49	4.00	0.08
2 1,4-difluorobenze	4.57	4.07	5.07	4.57	0.07
3 Chlorobenzene-d5	7.16	6.66	7.66	7.16	0.05
4 1,4-Dichlorobenze	8.46	7.96	8.96	8.46	-0.03

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = - 50% of internal standard area.
RT UPPER LIMIT = + 0.50 minutes of internal standard RT.
RT LOWER LIMIT = - 0.50 minutes of internal standard RT.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10081702 Date Analyzed: 10/08/17

Instrument ID: 92MSV5 Time Analyzed: 1051

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 (DFB) AREA #	RT
	12 HOUR STD	141003	7.16	247778	8.46	517455	4.57
	UPPER LIMIT	282006	7.66	495556	8.96	1034910	5.07
	LOWER LIMIT	70502	6.66	123889	7.96	258728	4.07
	EPA SAMPLE NO.						
01	LCS	143898	7.16	257046	8.46	533860	4.58
02	LCS	148295	7.16	263901	8.46	545894	4.57
03	BLANK	126621	7.16	209354	8.46	471411	4.57
04	BLANK	125985	7.16	197240	8.46	454539	4.57
05	EQUIPMENT BL	122645	7.16	203629	8.46	437802	4.58
06	TRIP BLANK	125430	7.16	206647	8.46	454119	4.57
07	TW-11	117102	7.16	190122	8.46	422526	4.57
08							
09							
10							
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17							
18							
19							
20							
21							
22							

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10081702 Date Analyzed: 10/08/17

Instrument ID: 92MSV5 Time Analyzed: 1051

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	386284	4.00				
	UPPER LIMIT	772568	4.50				
	LOWER LIMIT	193142	3.50				
	EPA SAMPLE NO.						
01	LCS	393119	4.00				
02	LCS	396769	4.00				
03	BLANK	342821	4.00				
04	BLANK	342691	4.00				
05	EQUIPMENT BL	321648	3.99				
06	TRIP BLANK	333688	4.00				
07	TW-11	312649	3.99				
08							
09							
10							
11							
12							
13							
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16							
17							
18							
19							
20							
21							
22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10081701.D	bfb	L/,bfb	BFB	1		< 2 BFB	10/08/17	10:34	CAH	
1/10081702.D	ccal_6	L/,ccal_6	CCALIB_6	1		< 2 8260w11	10/08/17	10:51	CAH	
1/10081702ccal.D	ccal_6	L/,ccal_6	CCALIB_6	1		< 2 8260WLL	10/08/17	10:51	CAH	
1/10081703.D	2113617	L/43464,2113617	LCS	1		< 2 8260w11	10/08/17	11:08	CAH	
1/10081704.D	2113661	L/43469,2113661	LCS	1		< 2 8260WLL	10/08/17	11:26	CAH	
1/10081705.D	cu	L/,cu	SAMPLE	1		< 2 8260w11	10/08/17	11:43	CAH	
1/10081706.D	cu	L/,cu	SAMPLE	1		< 2 8260w11	10/08/17	12:00	CAH	
1/10081707.D	2113616	L/43464,2113616	BLANK	1		< 2 8260w11	10/08/17	12:17	CAH	
1/10081708.D	2113660	L/43469,2113660	BLANK	1		< 2 8260WLL	10/08/17	12:35	CAH	
1/10081709.D	92357351004	L/43464,92357351004	SAMPLE	1		< 2 8260w11	10/08/17	12:52	CAH	
1/10081710.D	92357351005	L/43464,92357351005	SAMPLE	1		< 2 8260w11	10/08/17	13:09	CAH	
1/10081711.D	92357382006	L/43464,92357382006	SAMPLE	1		< 2 8260w11	10/08/17	13:26	CAH	
1/10081712.D	92357284002	L/43464,92357284002	SAMPLE	1		< 2 8260w11	10/08/17	13:43	CAH	
1/10081713.D	92357284003	L/43464,92357284003	SAMPLE	1		< 2 8260w11	10/08/17	14:01	CAH	
1/10081714.D	92357753006	L/43464,92357753006	SAMPLE	1		< 2 8260w11	10/08/17	14:18	CAH	
1/10081715.D	92357753007	L/43464,92357753007	SAMPLE	1		< 2 8260w11	10/08/17	14:35	CAH	
1/10081716.D	92357553003	L/43464,92357553003	SAMPLE	1		< 2 8260w11	10/08/17	15:24	CAH	
1/10081717.D	92357553004	L/43464,92357553004	SAMPLE	1		< 2 8260w11	10/08/17	15:41	CAH	
1/10081718.D	92357297012	L/43464,92357297012	SAMPLE	1		< 2 8260w11	10/08/17	15:58	CAH	
1/10081719.D	92357297013	L/43464,92357297013	SAMPLE	1		< 2 8260w11	10/08/17	16:16	CAH	
1/10081720.D	92357762003	L/43464,92357762003	SAMPLE	1		< 2 8260w11	10/08/17	16:33	CAH	
1/10081721.D	92357782015	L/43464,92357782015	SAMPLE	1		< 2 8260w11	10/08/17	16:50	CAH	
1/10081722.D	92357553001	L/43469,92357553001	SAMPLE	1		< 2 8260w11	10/08/17	17:07	CAH	
1/10081723.D	92357553002	L/43469,92357553002	SAMPLE	1		< 2 8260w11	10/08/17	17:24	CAH	
1/10081724.D	92357762001	L/43469,92357762001	SAMPLE	1		< 2 8260w11	10/08/17	17:41	CAH	
1/10081725.D	92357762002	L/43469,92357762002	SAMPLE	1		< 2 8260w11	10/08/17	17:58	CAH	
1/10081726.D	92357351001	L/43469,92357351001	SAMPLE	1		< 2 8260w11	10/08/17	18:16	CAH	
1/10081727.D	92357351002	L/43469,92357351002	SAMPLE	1		< 2 8260w11	10/08/17	18:33	CAH	
1/10081728.D	92357351003	L/43469,92357351003	SAMPLE	1		< 2 8260w11	10/08/17	18:50	CAH	
1/10081729.D	92357382003	L/43469,92357382003	SAMPLE	1		< 2 8260w11	10/08/17	19:07	CAH	
1/10081730.D	92357284001	L/43469,92357284001	SAMPLE	1		< 2 8260w11	10/08/17	19:24	CAH	✓ ≤12 hrs
1/10081731.D	92357753001	L/43469,92357753001	SAMPLE	1		< 2 8260w11	10/08/17	19:41	CAH	
1/10081732.D	92357753002	L/43469,92357753002	SAMPLE	1		< 2 8260w11	10/08/17	19:58	CAH	
1/10081733.D	92357753004	L/43469,92357753004	SAMPLE	1		< 2 8260w11	10/08/17	20:16	CAH	

Check Maintenance Items Performed:

___ Changed septum ___ Clipped column ___ Changed column (lot #_____)
___ Cleaned liner ___ Changed trap (lot #_____) ___ Other minor parts replaced _____
___ Replaced/Cleaned gold seal ___ Cleaned MS source ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv5.i\100817A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 14:17 10/09/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc.

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium
Misc. Prep Info [L]:
ISTD lot:
Tune std: _____

Method:

Surr. lot:
Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1\10081734.D	92357753005	L/43469,92357753005	SAMPLE	1	< 2	8260w11	10/08/17	20:33	CAH	
1\10081735.D	92357735001	L/43469,92357735001	SAMPLE	20	< 2	8260w11	10/08/17	20:50	CAH	
1\10081736.D	92357753003	L/43469,92357753003	SAMPLE	25	< 2	8260w11	10/08/17	21:07	CAH	
1\10081737.D	92357775005	L/43469,92357775005	SAMPLE	20	< 2	8260w11	10/08/17	21:24	CAH	
1\10081738.D	92357775019	L/43469,92357775019	SAMPLE	20	< 2	8260w11	10/08/17	21:41	CAH	

File Path 1: \\Wt\chem\92msv5.i\100817A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 14:17 10/09/2017

Data File: \\Wt\chem\92msv5.i\100917A.b\10091703bfb.D

Date : 09-OCT-2017 09:42

Client ID: ContCal6

Instrument: 92msv5.i

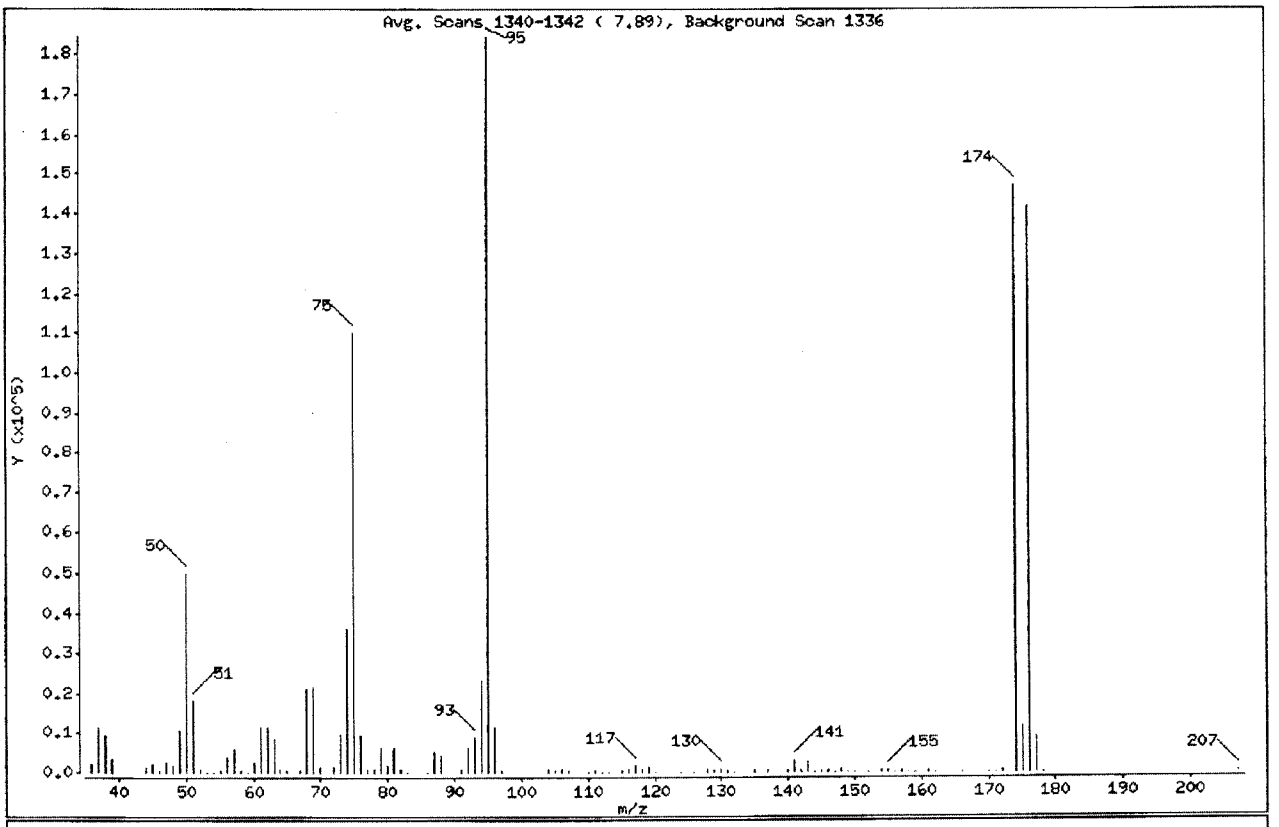
Sample Info: 100917A,8260WLL,SWB,1

Operator: SWB

Column phase: Restek Rtx-VMS

Column diameter: 0.18

1 bfb



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	27.12
75	30.00 - 60.00% of mass 95	59.69
96	5.00 - 9.00% of mass 95	6.24
173	Less than 2.00% of mass 174	0.00 (0.00)
174	Greater than 50.00% of mass 95	79.66
175	5.00 - 9.00% of mass 174	6.15 (7.72)
176	95.00 - 101.00% of mass 174	76.74 (96.34)
177	5.00 - 9.00% of mass 176	4.85 (6.31)

N/A assoc w/ QC only

Data File: \\Wt\chem\92msv5.i\100917A.b\10091703clp.D
Report Date: 09-Oct-2017 16:13

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i
Lab File ID: 10091703clp.D
Analysis Type: WATER
Lab Sample ID: ccal 6
Method: \\Wt\chem\92msv5.i\100917A.b\8260WLL.m

Injection Date: 09-OCT-2017 09:42
Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Init. Cal. Times: 14:40 16:23
Quant Type: ISTD

	COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
$	5 1,2-Dichloroethane-d4 (S)	0.78216	0.77708	0.77708	0.010	-0.64994	20.00000	Aver	
$	6 Toluene-d8 (S)	1.17061	1.14612	1.14612	0.010	-2.09271	20.00000	Aver	
$	7 4-Bromofluorobenzene (S)	1.71904	1.79627	1.79627	0.010	4.49269	20.00000	Aver	
	8 Dichlorodifluoromethane	50.00000	42.68293	0.51003	0.010	-14.63415	20.00000	Line	
	9 Chloromethane	0.66039	0.45273	0.45273	0.100	-31.44558	20.00000	Aver	<-
	10 Vinyl Chloride	0.44543	0.39007	0.39007	0.010	-12.42680	20.00000	Aver	
	11 Bromomethane	0.16729	0.08349	0.08349	0.010	-46.91775	20.00000	Aver	<-
	12 Chloroethane	0.26788	0.24638	0.24638	0.010	-8.03392	20.00000	Aver	
	13 Trichlorofluoromethane	0.73914	0.73364	0.73364	0.010	-0.74363	20.00000	Aver	
	14 Ethyl Ether	0.37424	0.35357	0.35357	0.010	-5.52480	20.00000	Aver	
	15 Ethanol	2000	2108	0.00383	0.010	5.38051	20.00000	Line	<-
	16 1,1-Dichloroethene	0.71167	0.66185	0.66185	0.010	-7.00091	20.00000	Aver	
	17 1,1,2-Trichlorotrifluoroeth	0.32849	0.30538	0.30538	0.010	-7.03412	20.00000	Aver	
	18 Carbon Disulfide	0.84727	0.72490	0.72490	0.010	-14.44312	20.00000	Aver	
	19 Iodomethane	100	67.68314	0.15000	0.010	-32.30686	20.00000	Quad	<-
	20 Acrolein	0.06400	0.05328	0.05328	0.010	-16.78098	20.00000	Aver	
	21 Allyl chloride	0.17049	0.15983	0.15983	0.010	-6.24614	20.00000	Aver	
	22 Methylene Chloride	50.00000	49.39050	0.67536	0.010	-1.21901	20.00000	Line	
	23 Acetone	0.17164	0.16720	0.16720	0.010	-2.58609	20.00000	Aver	
	24 Methyl Acetate	0.06142	0.05673	0.05673	0.010	-7.64081	20.00000	Aver	
	25 trans-1,2-Dichloroethene	0.69585	0.64033	0.64033	0.010	-7.97913	20.00000	Aver	
	26 Methyl-tert-butyl Ether	1.34678	1.25915	1.25915	0.010	-6.50652	20.00000	Aver	
	27 n-Hexane	0.93814	0.85825	0.85825	0.010	-8.51651	20.00000	Aver	
	28 tert-Butyl Alcohol	0.09192	0.08310	0.08310	0.010	-9.59753	20.00000	Aver	
	29 Acetonitrile	0.05350	0.04887	0.04887	0.010	-8.65191	20.00000	Aver	
	30 Diisopropyl Ether	1.80588	1.68645	1.68645	0.010	-6.61337	20.00000	Aver	
	31 2-Chloro-1,3-Butadiene	0.98311	0.94920	0.94920	0.010	-3.44877	20.00000	Aver	
	32 1,1-Dichloroethane	0.86559	0.78403	0.78403	0.100	-9.42207	20.00000	Aver	
	33 Acrylonitrile	0.21915	0.20835	0.20835	0.010	-4.93024	20.00000	Aver	
	34 Ethyl-tert-butyl ether	1.73670	1.68214	1.68214	0.010	-3.14179	20.00000	Aver	
	35 Vinyl Acetate	1.41478	1.44244	1.44244	0.010	1.99124	20.00000	Aver	
	36 cis-1,2-Dichloroethene	0.70141	0.66903	0.66903	0.010	-4.61534	20.00000	Aver	
	37 2,2-Dichloropropane	0.80475	0.76098	0.76098	0.010	-5.43884	20.00000	Aver	
	38 Bromochloromethane	0.25250	0.24280	0.24280	0.010	-3.84212	20.00000	Aver	
	39 Cyclohexane	0.81646	0.74872	0.74872	0.010	-8.29703	20.00000	Aver	
	40 Chloroform	50.00000	47.02100	0.74041	0.010	-5.95801	20.00000	Line	
	41 Ethyl Acetate	0.85794	0.83735	0.83735	0.010	-2.39969	20.00000	Aver	
	42 Tetrahydrofuran	0.21118	0.20434	0.20434	0.010	-3.23541	20.00000	Aver	
	43 Carbon Tetrachloride	0.54578	0.53495	0.53495	0.010	-1.98531	20.00000	Aver	
	44 1,1,1-Trichloroethane	0.85796	0.80127	0.80127	0.010	-6.60720	20.00000	Aver	(M)
	45 2-Butanone	0.30065	0.27410	0.27410	0.010	-8.83056	20.00000	Aver	(M)
	46 1,1-Dichloropropene	0.57094	0.53698	0.53698	0.010	-6.27581	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i Injection Date: 09-OCT-2017 09:42
Lab File ID: 10091703clp.D Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Analysis Type: WATER Init. Cal. Times: 14:40 16:23
Lab Sample ID: ccal 6 Quant Type: ISTD
Method: \\Wt\chem\92msv5.i\100917A.b\8260WLL.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
47 tert-Butyl Formate	0.57713	0.57597	0.57597	0.010	-0.20045	20.00000	Aver	
48 Benzene	1.03637	0.95929	0.95929	0.010	-7.43730	20.00000	Aver	
49 Propionitrile	0.08916	0.08214	0.08214	0.010	-7.88881	20.00000	Aver	(Q)
50 Methacrylonitrile	0.38603	0.37807	0.37807	0.010	-2.11337	20.00000	Aver	
51 tert-Amylmethyl ether	0.91243	0.89128	0.89128	0.010	-2.31827	20.00000	Aver	
52 1,2-Dichloroethane	0.88762	0.83288	0.83288	0.010	-6.16718	20.00000	Aver	
53 Isobutanol	0.03119	0.03012	0.03012	0.010	-3.45509	20.00000	Aver	
54 tert-Amyl Alcohol	0.04939	0.04924	0.04924	0.010	-0.30988	20.00000	Aver	
55 Methylcyclohexane	0.41261	0.39260	0.39260	0.010	-4.84871	20.00000	Aver	
56 Trichloroethene	0.28373	0.27968	0.27968	0.010	-1.43439	20.00000	Aver	
57 Dibromomethane	0.19558	0.19767	0.19767	0.010	1.08524	20.00000	Aver	
58 1,2-Dichloropropane	0.32532	0.29739	0.29739	0.010	-8.58503	20.00000	Aver	
59 Bromodichloromethane	0.48293	0.45192	0.45192	0.010	-6.40143	20.00000	Aver	
60 Methyl methacrylate	0.40569	0.40892	0.40892	0.010	0.79579	20.00000	Aver	
61 1,4-Dioxane	0.00157	0.00158	0.00158	0.010	0.62618	20.00000	Aver	*-
62 2-Chloroethyl Vinyl Ether	0.19520	0.19553	0.19553	0.010	0.16774	20.00000	Aver	
63 cis-1,3-Dichloropropene	0.48521	0.47142	0.47142	0.010	-2.84251	20.00000	Aver	
64 Toluene	1.17267	1.08920	1.08920	0.010	-7.11854	20.00000	Aver	
65 Tetrachloroethene	1.12012	1.13696	1.13696	0.010	0.80125	20.00000	Aver	
66 4-Methyl-2-Pentanone	0.48270	0.48213	0.48213	0.010	-0.11735	20.00000	Aver	
67 trans-1,3-Dichloropropene	0.51288	0.49962	0.49962	0.010	-2.58603	20.00000	Aver	
68 1,1,2-Trichloroethane	0.25549	0.24373	0.24373	0.010	-4.60340	20.00000	Aver	
69 Ethyl methacrylate	1.50360	1.64479	1.64479	0.010	9.35693	20.00000	Aver	
70 Dibromochloromethane	1.26284	1.27096	1.27096	0.010	0.64244	20.00000	Aver	
71 1,3-Dichloropropane	1.68169	1.74158	1.74158	0.010	3.56159	20.00000	Aver	
72 1,2-Dibromoethane	0.99575	1.01657	1.01657	0.010	2.09086	20.00000	Aver	
73 3,3-Dimethyl-1-butanol	0.10168	0.10215	0.10215	0.010	0.54225	20.00000	Aver	
74 2-Hexanone	1.68558	1.67438	1.67438	0.010	-0.66450	20.00000	Aver	
75 Chlorobenzene	2.90593	2.80335	2.80335	0.300	-3.53028	20.00000	Aver	
76 Ethylbenzene	5.04004	4.86674	4.86674	0.010	-3.43839	20.00000	Aver	
77 1,1,1,2-Tetrachloroethane	1.16993	1.21522	1.21522	0.300	2.13549	20.00000	Aver	
78 m&p-Xylene	3.96207	3.99134	3.99134	0.010	0.73881	20.00000	Aver	
79 o-Xylene	1.78645	1.78173	1.78173	0.010	-0.26400	20.00000	Aver	
80 Styrene	2.90859	3.08138	3.08138	0.010	5.79941	20.00000	Aver	
81 Bromoform	0.87088	0.77695	0.77695	0.100	-10.78561	20.00000	Aver	
82 Isopropylbenzene (Cumene)	4.43106	4.58541	4.58541	0.010	3.48340	20.00000	Aver	
83 cis 1,4-dichloro-2-butene	2.43365	2.36527	2.36527	0.010	-2.80994	20.00000	Aver	(Q)
84 Bromobenzene	0.73194	0.67730	0.67730	0.010	-7.46542	20.00000	Aver	
85 n-Propylbenzene	2.99508	2.68243	2.68243	0.010	-10.43857	20.00000	Aver	
86 1,1,2,2-Tetrachloroethane	1.33387	1.34149	1.34149	0.300	0.57093	20.00000	Aver	
87 2-Chlorotoluene	2.05963	1.93015	1.93015	0.010	-6.28647	20.00000	Aver	
88 1,3,5-Trimethylbenzene	2.31923	2.16372	2.16372	0.010	-6.70509	20.00000	Aver	
89 1,2,3-Trichloropropane	1.27108	1.35059	1.35059	0.010	6.25481	20.00000	Aver	

Pace Analytical Services, Inc.

CONTINUING CALIBRATION COMPOUNDS

Instrument ID: 92msv5.i Injection Date: 09-OCT-2017 09:42
Lab File ID: 10091703clp.D Init. Cal. Date(s): 04-OCT-2017 04-OCT-2017
Analysis Type: WATER Init. Cal. Times: 14:40 16:23
Lab Sample ID: ccal 6 Quant Type: ISTD
Method: \\Wt\chem\92msv5.i\100917A.b\8260WLL.m

COMPOUND	RRF / AMOUNT	RF50	CCAL RRF50	MIN RRF	%D / %DRIFT	MAX %D / %DRIFT	CURVE TYPE	QC FLAGS
90 trans 1,4-Dichloro-2-butene	1.13537	1.08387	1.08387	0.010	-4.53640	20.00000	Aver	
91 Cyclohexanone	0.24305	0.20948	0.20948	0.010	-13.81292	20.00000	Aver	
92 4-Chlorotoluene	2.30458	2.01894	2.01894	0.010	-8.42085	20.00000	Aver	
93 tert-Butylbenzene	2.19677	2.05506	2.05506	0.010	-6.45033	20.00000	Aver	
94 Pentachloroethane	0.49532	0.47000	0.47000	0.010	-5.11001	20.00000	Aver	
95 1,2,4-Trimethylbenzene	2.45127	2.30652	2.30652	0.010	-5.90520	20.00000	Aver	
96 sec-Butylbenzene	2.44041	2.31365	2.31365	0.010	-5.27197	20.00000	Aver	
97 p-Isopropyltoluene	2.20148	2.18592	2.18592	0.010	-1.60077	20.00000	Aver	
98 1,3-Dichlorobenzene	1.35831	1.25482	1.25482	0.010	-7.61926	20.00000	Aver	
99 1,4-Dichlorobenzene	1.41302	1.32420	1.32420	0.010	-6.21911	20.00000	Aver	
100 1,2,3-Trimethylbenzene	2.73112	2.58732	2.58732	0.010	-4.91755	20.00000	Aver	
101 n-Butylbenzene	1.86844	1.80029	1.80029	0.010	-3.64710	20.00000	Aver	
102 1,2-Dichlorobenzene	1.34184	1.25089	1.25089	0.010	-6.77756	20.00000	Aver	
103 1,2-Dibromo-3-Chloropropane	0.24099	0.23560	0.23560	0.010	-2.19699	20.00000	Aver	
104 Hexachloro-1,3-butadiene	0.35711	0.34007	0.34007	0.010	-4.77281	20.00000	Aver	
105 1,2,4-Trichlorobenzene	0.78450	0.75506	0.75506	0.010	-3.75332	20.00000	Aver	
106 Naphthalene	2.28938	2.34492	2.34492	0.010	2.42563	20.00000	Aver	
107 1,2,3-Trichlorobenzene	0.73730	0.69914	0.69914	0.010	-5.17512	20.00000	Aver	

QC Flag Legend

Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.

Average %D / Drift Results.

Calculated Average %D/Drift = 5.93929
Maximum Average %D/Drift = 0.000e+000
* Failed Average %D/Drift Test.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10091703CLP Date Analyzed: 10/09/17

Instrument ID: 92MSV5 Time Analyzed: 0942

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (CBZ) AREA #	RT	IS2 (DCB) AREA #	RT	IS3 (DFB) AREA #	RT
	12 HOUR STD	121396	7.16	225783	8.46	473467	4.57
	UPPER LIMIT	242792	7.66	451566	8.96	946934	5.07
	LOWER LIMIT	60698	6.66	112892	7.96	236734	4.07
	EPA SAMPLE NO.						
01	DUP	112129	7.16	196670	8.47	435659	4.57
02	DUP	110711	7.16	186913	8.47	420428	4.57
03	MS	122338	7.16	217668	8.46	468962	4.57
04	MS	128385	7.16	211097	8.47	470179	4.57
05							
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21							
22							

N/A
GC
only

IS1 (CBZ) = Chlorobenzene-d5
IS2 (DCB) = 1,4-Dichlorobenzene-d4
IS3 (DFB) = 1,4-difluorobenzene

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

8A
VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Contract:

Lab Code: Case No.: SAS No.: SDG No.: SDGA27970

Lab File ID (Standard): 10091703CLP Date Analyzed: 10/09/17

Instrument ID: 92MSV5 Time Analyzed: 0942

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

		IS4 AREA #	RT	AREA #	RT	AREA #	RT
	12 HOUR STD	351995	3.99				
	UPPER LIMIT	703990	4.49				
	LOWER LIMIT	175998	3.49				
	EPA SAMPLE NO.						
01	DUP	317061	4.00				
02	DUP	320566	4.00				
03	MS	350192	3.99				
04	MS	353265	3.99				
05							
06							
07							
08							
09							
10							
11							
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15							
16							
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18							
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20							
21							
22							

IS4 = Pentafluorobenzene

UPPER LIMIT = +100% of internal standard area.

Column used to flag internal standard area values with an asterisk.

FORM VIII VOA 1/87 Rev.

INSTRUMENT RUN LOG
Pace Analytical Services, Inc

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium **Method:**
Misc. Prep Info [L]:
ISTD lot: **Surr. lot:**
Tune std: _____ **Cal. std:** _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10091701.D	systemcheck	L/,systemcheck	BFB	1	< 2	BFB	10/09/17	09:08	SWB	
1/10091702.D	BFB	L/,bfb	BFB	1	7	BFB	10/09/17	09:25	DJT	
1/10091703.D	ccal_6	L/,ccal_6	CCALIB_6	1	< 2	8260WLL	10/09/17	09:42	SWB	
1/10091703bfb.D	ccal_6	L/,ccal_6	BFB	1	< 2	BFB	10/09/17	09:43	SWB	
1/10091703clp.D	ccal_6	L/,ccal_6	CCALIB_6	1	< 2	8260WLL	10/09/17	09:41	SWB	
1/10091704.D	2113899	L/,lcs	LCS	1	< 2	8260WLL	10/09/17	10:00	SWB	
1/10091705.D	2114403	L/,lcs	LCS	1	< 2	8260WLL	10/09/17	10:17	SWB	
1/10091706.D	2112513	L/,2112513	SAMPLE	1	< 2	8260WLL	10/09/17	10:34	SWB	
1/10091707.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	10:51	SWB	
1/10091708.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	11:08	SWB	
1/10091709.D	2113898	L/,2113898	SAMPLE	1	< 2	8260WLL	10/09/17	11:26	SWB	
1/10091710.D	2114402	L/,mb	SAMPLE	1	< 2	8260WLL	10/09/17	11:43	SWB	
1/10091711.D	92357382005	L/43476,92357382005	SAMPLE	1	< 2	8260WLL	10/09/17	12:00	SWB	
1/10091712.D	92357341004	L/43476,92357341004	SAMPLE	4	< 2	8260WLL	10/09/17	12:17	SWB	
1/10091713.D	92357341010	L/43476,92357341010	SAMPLE	2	< 2	8260WLL	10/09/17	12:34	SWB	
1/10091714.D	2113900	L/43476,2113900	SAMPLE	1	< 2	8260WLL	10/09/17	12:52	SWB	
1/10091715.D	2113901	L/43476,2113901	SAMPLE	1	< 2	8260WLL	10/09/17	13:09	SWB	
1/10091716.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	13:26	SWB	
1/10091717.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	13:43	SWB	
1/10091718.D	92357780011	L/43476,92357780011	SAMPLE	1	< 2	8260WLL	10/09/17	14:00	SWB	
1/10091719.D	92357955014	L/43476,92357955014	SAMPLE	1	< 2	8260WLL	10/09/17	14:18	SWB	
1/10091721.D	92357955015	L/,92357955015	SAMPLE	1	< 2	8260WLL	10/09/17	14:39	SWB	
1/10091722.D	2113619	L/43464,2113619	DUP	1	< 2	8260WLL	10/09/17	14:56	SWB	
1/10091723.D	2113663	L/43469,2113663	DUP	1	< 2	8260WLL	10/09/17	15:13	SWB	
1/10091724.D	2113618	L/43464,2113618	MS	1	< 2	8260WLL	10/09/17	15:30	SWB	
1/10091725.D	2113662	L/43469,2113662	MS	1	< 2	8260WLL	10/09/17	15:47	SWB	
1/10091726.D	cu	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	16:04	SWB	
1/10091727.D	92357958019	L/43476,92357958019	SAMPLE	1	< 2	8260WLL	10/09/17	16:22	SWB	
1/10091728.D	92357958020	L/43476,92357958020	SAMPLE	1	< 2	8260WLL	10/09/17	16:39	SWB	
1/10091729.D	92357967031	L/43476,92357967031	SAMPLE	1	< 2	8260WLL	10/09/17	16:56	SWB	
1/10091730.D	92357967032	L/43476,92357967032	SAMPLE	1	< 2	8260WLL	10/09/17	17:13	SWB	
1/10091731.D	92357967033	L/43476,92357967033	SAMPLE	1	< 2	8260WLL	10/09/17	17:31	SWB	
1/10091732.D	92357967034	L/43476,92357967034	SAMPLE	1	< 2	8260WLL	10/09/17	17:48	SWB	
1/10091733.D	92357967035	L/43476,92357967035	SAMPLE	1	< 2	8260WLL	10/09/17	18:05	SWB	

Check Maintenance Items Performed:

___ Changed septum ___ Clipped column ___ Changed column (lot #_____)
___ Cleaned liner ___ Changed trap (lot #_____) ___ Other minor parts replaced _____
___ Replaced/Cleaned gold seal ___ Cleaned MS source ___ No maintenance performed today

Additional Comments:

File Path 1: \\Wt\chem\92msv5.i\100917A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 10:18 10/10/2017

INSTRUMENT RUN LOG
Pace Analytical Services, Inc

Instrument: 92msv5.i
Column RTX-VMS 20m X 0.18mm Helium Method:
Misc. Prep Info [L]:
ISTD lot: Surr. lot:
Tune std: _____ Cal. std: _____

Path/File	Lab ID	Mtrx/Batch	Type	DF	pH	Method	Date	Time	Oper	Comments
1/10091734.D	92357967036	L/43476,92357967036	SAMPLE	1	< 2	8260WLL	10/09/17	18:22	SWB	
1/10091735.D	92357967037	L/43476,92357967037	SAMPLE	1	< 2	8260WLL	10/09/17	18:39	SWB	
1/10091736.D	92357967038	L/43476,92357967038	SAMPLE	1	< 2	8260WLL	10/09/17	18:56	SWB	
1/10091737.D	92357958002	L/43476,92357958002	SAMPLE	1	< 2	8260WLL	10/09/17	19:14	SWB	
1/10091738.D	92357958003	L/43476,92357958003	SAMPLE	1	< 2	8260WLL	10/09/17	19:31	SWB	
1/10091739.D	92357958004	L/43476,92357958004	SAMPLE	1	< 2	8260WLL	10/09/17	19:48	SWB	
1/10091740.D	92357955002	L/43482,92357955002	SAMPLE	1	< 2	8260WLL	10/09/17	20:05	SWB	
1/10091741.D	92357955004	L/43482,92357955004	SAMPLE	1	< 2	8260WLL	10/09/17	20:22	SWB	
1/10091742.D	92357955005	L/43482,92357955005	SAMPLE	1	< 2	8260WLL	10/09/17	20:39	SWB	
1/10091743.D	92357955006	L/43482,92357955006	SAMPLE	1	< 2	8260WLL	10/09/17	20:57	SWB	
1/10091744.D	92357955009	L/43482,92357955009	SAMPLE	1	< 2	8260WLL	10/09/17	21:14	SWB	
1/10091745.D	92357955010	L/43482,92357955010	SAMPLE	1	< 2	8260WLL	10/09/17	21:31	SWB	
1/10091746.D	92357955011	L/43482,92357955011	SAMPLE	1	< 2	8260WLL	10/09/17	21:48	SWB	
1/10091747.D	92357955012	L/43482,92357955012	SAMPLE	1	< 2	8260WLL	10/09/17	22:05	SWB	
1/10091748.D	ck	L/,cu	SAMPLE	1	< 2	8260WLL	10/09/17	22:22	SWB	

File Path 1: \\Wt\chem\92msv5.i\100917A.b
Matrix Codes: [G]as, [L]iquid, [S]olid, [N]one
Report Date: 10:19 10/10/2017

SECTION 4

INORGANIC DATA SUPPORT DOCUMENTATION

A. SDG 92357050

ENVIRONMENTAL STANDARDS

INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: Kinder Morgan - 2017 Fountain Inn DV

Sample Collection Dates: 9/27/17

Job Number: 20177961.A000

Project Manager: ALM

Laboratory: Pace Carolinas

Reviewed by: CMR

Approved by: [illegible]

Completion Date: 11/2017

Applicable Sample No's ( )

Refer to Table 1 in the Quality Assurance Review

Sample No.	Lab Control No.
92357050	

Deliverable:

CLP (Full)	( )
Level IV (Full)	(X)
Limited	( )
Other:	

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail (Check (√) if Yes or Footnote Letter for Comments Below)					Problems Identified (Check (√) if Yes or Footnote Letter for Comments Below)					Support Documentation Attachments (Check (√) if Yes or Footnote Letter for Comments Below)				
	6010	5310	2320	9056		6010	5310	2320	9056		6010	5310	2320	9056	
Holding Times	√	√	√	√							√	√	√	√	
Blank Analysis Results	√	√	√	√							√	√	√	√	
Matrix Spike (Predigestion) Results	√	√	√	√							√	√	√	√	
Duplicate Analysis: ( ) Field ( ) Lab															
Quantitation of Results	√	√	√	√							√	√	√	√	
Detection Limit/Sensitivity	√	√	√	√							√	√	√	√	
Initial Calibrations	√	√	√	√							√	√	√	√	
Continuing Calibrations	√	√	√	√							√	√	√	√	
Laboratory Control Standard (LCS)	√	√	√	√							√	√	√	√	
ICP Linear Range Analysis	√										√				
ICP Interference Checks	√										√				
ICP Serial Dilutions	√										√				
ICP Post-Digestion Spike															
GFAA Post Digestion Spikes															
GFAA Duplicate Injections															
ICP Multiple Exposures															
GFAA Standard Additions															
CRDL Standards	√	√	√	√							√	√	√	√	
Condition on Receipt	√	√	√	√							√	√	√	√	
Percent Solids															
Others:															

Comments:

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

Analysis Type	Matrix (Aq, S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (mg/L, mg/kg)	Qualif Limit
			SDG: 92357050			5X
			All blanks	none		

2: MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: No blank qualification necessary

92ICP4 Analytical Run

ug/L

Analytical Run: 20171005.csv
Method:

Sample ID	Dil	QC	Date	Time	Method	Co_237.8 Y_371.0	Cu_324.7 Y_371.0	Fe_259.9 Y_371.0	Pb_220.3 Y_371.0	Mg_279.0 Y_371.0	Mn_257.6 Y_371.0	Mo_204.5 Y_371.0	Ni_231.6 Y_371.0	K_769.8 Y_371.0
Blank	1	UNK	10/05/17	19:48:28		0	0	0	0	0	0	0	0	0
5 STD	1	UNK	10/05/17	19:51:40		5	5	50	5	100	5	5	5	
500 STD	1	UNK	10/05/17	19:55:00		500	500	5000	500	5000	500	500	500	5000
1000 STD	1	UNK	10/05/17	19:59:56		1000	1000	10000	1000	10000	1000	1000	1000	10000
ICV	1	ICV	10/05/17	20:14:29		518	511	5204	508	5032	520	540	504	0
ICB	1	ICB	10/05/17	20:27:25		0.007	0.183	0.952	-0.202	1.64	0.061	0.8	-0.17	0
LL CCV	1	CCVB	10/05/17	20:30:24		4.42	4.82	49.5	5.63	95.4	4.79	4.68	4.6	0
ICSA	1	ICSA	10/05/17	20:33:44		-1.38	-3.44	51073	6.32	93051	3.98	-2.3	6.28	0
2110270_23880	1	BLANK	10/05/17	22:19:23	6010 W	-0.38	-0.148	-1.61	0.479	3.81	-0.178	-0.149	-0.499	0
2110271_23880	1	LCS	10/05/17	22:22:19	6010 W	481	465	4405	490	4862	480	276	475	0
92357050001_23880	1	PS	10/05/17	22:27:13	6010 W	23.7	-0.049	14.1	2.29	1756	99.1	0.486	0.722	0
2110272_23880	1	MS	10/05/17	22:30:41	6010 W	510	478	4817	481	6657	580	342	476	0
2110273_23880	1	MSD	10/05/17	22:35:08	6010 W	497	465	4698	470	6459	564	341	466	0
92357050002_23880	1	PS	10/05/17	22:43:44	6010 W	6.88	-0.334	2846	2.62	1001	578	-1.02	1.23	0
92357050003_23880	1	PS	10/05/17	22:47:46	6010 W	0.025	0.529	213	2.28	292	68.5	-1.07	0.067	0
92357250009_23880	1	PS	10/05/17	22:51:33	6010 W	0.328	5.84	760	5.17	15096	382	15.4	3.65	0
92357250010_23880	1	PS	10/05/17	22:55:38	6010 W	1.13	8.06	1187	2.77	7290	88.6	0.744	1.77	0
92357250011_23880	1	PS	10/05/17	22:59:49	6010 W	0.833	1.13	377	4.08	15538	1374	1.51	2.19	0
CCV	1	CCV	10/05/17	23:03:45		481	468	4820	480	4699	482	485	479	0
CCB	1	CCB	10/05/17	23:07:41		-0.162	0.032	1.12	0.047	0.506	-0.044	3.2	0.121	0
LL CCV	1	CCVB	10/05/17	23:10:40		4.61	4.64	49.4	4.75	93.2	4.69	5.87	4.52	0
92357250012_23880	1	PS	10/05/17	23:14:03	6010 W	9.55	30.5	8965	28.6	16025	667	-3.14	7.18	0
92357250013_23880	1	PS	10/05/17	23:18:29	6010 W	0.391	0.66	7329	4.82	16585	2927	-2.63	2.86	0
92357250014_23880	1	PS	10/05/17	23:22:56	6010 W	7.36	5	18109	3.46	28403	2751	-2.38	5.72	0
92357250015_23880	1	PS	10/05/17	23:27:45	6010 W	3.62	-0.159	214	5.76	19622	1883	-0.888	5.18	0
92357250016_23880	1	PS	10/05/17	23:31:45	6010 W	6.61	14.3	10020	8.44	15877	2568	-4.3	5.77	0
92357250017_23880	1	PS	10/05/17	23:35:56	6010 W	1.04	4.19	2776	5.71	3996	169	-3.24	2.98	0
92357250018_23880	1	PS	10/05/17	23:40:08	6010 W	6.38	17.4	6992	13.9	18510	3977	-3.25	8.73	0
92357250019_23880	1	PS	10/05/17	23:44:27	6010 W	-0.629	-1.21	2879	7.74	25001	438	-1.59	6.59	0
92357250020_23880	1	PS	10/05/17	23:48:38	6010 W	0.701	2.43	1125	7.8	20884	2116	-1.56	4.31	0
92357250028_23880	1	PS	10/05/17	23:52:55	6010 W	1.3	1.38	163	6.49	22149	4018	-0.02	2.95	0
CCV	1	CCV	10/05/17	23:56:46		479	467	4800	479	4685	480	482	477	0
CCB	1	CCB	10/06/17	0:00:26		-0.022	-0.019	1.52	1.23	1.36	0.003	3.68	0.309	0
LL CCV	1	CCVB	10/06/17	0:03:43		4.71	4.69	49.7	5.17	93.1	4.72	5.47	4.41	0
92357250029_23880	1	PS	10/06/17	0:07:07	6010 W	0.92	1.32	2756	2.82	15904	1002	-1.06	2.38	0
92357250030_23880	1	PS	10/06/17	0:11:17	6010 W	1.35	4.59	2087	8.54	21013	2088	-2.64	4.98	0
92357426001_23880	1	PS	10/06/17	0:15:35	6010 W	0.903	3.73	448	4.49	11248	58.4	-1.15	7.73	0
92357426002_23880	1	PS	10/06/17	0:19:31	6010 W	0.558	4.62	1402	8.18	20041	36.4	-5.28	9.53	0
92357426002L_23880	5	SD	10/06/17	0:23:38	6010 W	-0.075	0.888	347	1.82	3909	7.28	-1.3	1.26	0
92357050002_23880	10	PS	10/06/17	0:27:06	6010 W	0.437	-0.117	296	-0.108	96.7	55.6	-0.283	-0.422	0
2110295_23881	1	BLANK	10/06/17	0:30:34	2007 W	-0.281	-0.11	1.67	0.538	2.3	-0.086	-0.051	0.348	0
2110296_23881	1	LCS	10/06/17	0:33:32	2007 W	397	389	4096	390	3941	401	430	387	0
92356898001_23881	1	PS	10/06/17	0:37:08	2007 W	13	4.07	644	-16.1	229	2427	353	15	0

Analytical Run: 20171005.csv
Method:

						Co_237.8	Cu_324.7	Fe_259.9	Pb_220.3	Mg_279.0	Mn_257.6	Mo_204.5	Ni_231.6	K_769.8
Sample ID	Dil	QC	Date	Time	Method	Y_371.0	Y_371.0	Y_371.0	Y_371.0	Y_371.0	Y_371.0	Y_371.0	Y_371.0	Y_371.0
92356882008_23870	1	PS	10/06/17	6:07:50	2007 W	-0.656	-0.987	53.8	7.34	48160	56.4	-0.681	4.58	0
92356882009_23870	1	PS	10/06/17	6:11:30	2007 W	0.396	0.408	1947	9.33	54152	4816	8.52	6.01	0
92356882010_23870	1	PS	10/06/17	6:15:19	2007 W	1.21	-1.62	847	8.45	43401	4135	4.36	3.68	0
92356882011_23870	1	PS	10/06/17	6:19:02	2007 W	0.325	9.9	6883	7.53	11450	118	-2.89	7.42	0
2109949_23870	1	MS	10/06/17	6:22:38	2007 W	437	429	12148	421	15309	563	476	435	0
2109950_23870	1	MSD	10/06/17	6:26:22	2007 W	435	429	12087	414	14645	560	489	430	0
CCV	1	CCV	10/06/17	6:30:11		486	442	4901	484	4508	497	498	491	0
CCB	1	CCB	10/06/17	6:34:20		0.072	-0.288	1.18	0.238	2.5	0.065	3.48	0.156	0
LL CCV	1	CCVB	10/06/17	6:37:39		4.57	4.03	48.9	4.97	89.6	4.78	5.56	4.6	0
92356882012_23870	1	PS	10/06/17	6:41:06	2007 W	34.5	-1.31	-9.26	15.9	124205	5312	12.4	15.3	0
92356882013_23870	1	PS	10/06/17	6:44:52	2007 W	0.441	0.812	987	6.97	19498	134	-3.3	3.17	0
92356882014_23870	1	PS	10/06/17	6:48:31	2007 W	0.538	-1.18	3717	8.93	45743	3803	2.04	3.66	0
92356882015_23870	1	PS	10/06/17	6:52:16	2007 W	52.3	40.5	30348	12.6	52158	19653	4.68	33.7	0
92356882016_23870	1	PS	10/06/17	6:56:56	2007 W	14.4	-0.434	808	10.1	53573	4355	6.44	5.33	0
92356882017_23870	1	PS	10/06/17	7:00:47	2007 W	3.4	-1.18	2841	9.82	57722	5047	2.41	5.41	0
92356882018_23870	1	PS	10/06/17	7:04:36	2007 W	1.39	2.64	4456	10.2	66409	4078	4.53	5.2	0
92356882019_23870	1	PS	10/06/17	7:08:20	2007 W	-1.35	20.8	-16.5	6.07	13719	4.48	-3.84	1.68	0
92356882020_23870	1	PS	10/06/17	7:11:55	2007 W	-0.867	5.24	108	8.63	38152	2.21	-0.961	2.66	0
92356882020L_23870	5	SD	10/06/17	7:15:35	2007 W	-0.452	0.701	20.9	2.86	8182	0.377	-0.623	0.296	0
CCV	1	CCV	10/06/17	7:19:10		464	422	4680	463	4326	475	472	469	0
CCB	1	CCB	10/06/17	7:23:01		-0.085	-0.334	1.05	0.75	2.08	0.064	3.24	0.15	0
LL CCV	1	CCVB	10/06/17	7:26:22		4.24	3.73	45.9	4.81	85.3	4.54	5.23	4.61	0
ICSA	1	ICSA2	10/06/17	7:29:50		-3.77	-3.7	47471	5.11	81562	3.77	-1.36	6.1	0
2109706_23863	1	BLANK	10/06/17	7:33:49	6010 W	-0.254	-0.486	2.02	1.08	4.45	-0.131	0.226	-0.219	0
2109707_23863	1	LCS	10/06/17	7:36:49	6010 W	443	410	4577	432	4203	453	485	434	0
92356545001_23863	10000	PS	10/06/17	7:40:29	6010 W	-0.189	16.2	0.569	0.43	19.9	0.313	2.73	2.49	0
2109708_23863	10000	MS	10/06/17	7:43:49	6010 W	-0.193	15.9	-0.718	1.33	20.5	0.307	0.678	2.28	0
2109709_23863	10000	MSD	10/06/17	7:47:11	6010 W	0	16.3	-1.01	0.846	20.4	0.329	0.184	2.5	0
92356545002_23863	10000	PS	10/06/17	7:50:34	6010 W	-0.262	1.06	3.1	1.47	7.61	0.531	-0.164	1.26	0
CCV	1	CCV	10/06/17	7:53:53		467	424	4691	465	4342	476	473	470	0
CCB	1	CCB	10/06/17	7:57:41		0.038	-0.313	1.52	1.12	2.22	0.079	3.38	0.386	0
LL CCV	1	CCVB	10/06/17	8:01:01		4.44	3.86	46.8	4.57	86.8	4.65	5.48	4.43	0
ICSA	1	ICSA	10/06/17	8:04:32		-3.6	-3.88	49926	4.26	86281	3.99	-1.98	6.01	0

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ICP MDL SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Element	MDL µg/L	Date of MDL
Aluminum	2.21	8/1/2017
Antimony	1.42	8/1/2017
Arsenic	1.45	8/1/2017
Barium	0.16	8/1/2017
Beryllium	0.10	8/1/2017
Boron	1.53	8/1/2017
Cadmium	0.22	8/1/2017
Calcium	25.91	8/1/2017
Chromium	0.35	8/1/2017
Cobalt	0.57	8/1/2017
Copper	1.59	8/1/2017
Iron	3.28	8/1/2017
Lead	2.46	8/1/2017
Magnesium	4.31	8/1/2017
Manganese	0.44	8/1/2017
Molybdenum	0.63	8/1/2017
Nickel	1.48	8/1/2017
Potassium		8/1/2017
Selenium	5.85	8/1/2017
Silicon	2.05	8/1/2017
Silver	0.12	8/1/2017
Sodium		8/1/2017
Strontium		8/1/2017
Thallium	1.17	8/1/2017
Tin		8/1/2017
Titanium	3.66	8/1/2017
Vanadium	0.20	8/1/2017
Zinc	1.38	8/1/2017

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380827
QC Batch: Method: EPA 3010A
Analysis Method: EPA 6010
Associated Lab Samples: 92357050001, 92357050002, 92357050003

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
7439-89-6	Iron	ND	ug/L	50.0	10/05/17 22:19	
7439-96-5	Manganese	ND	ug/L	5.0	10/05/17 22:19	

Type	Sample	Matrix
BLANK	2110270	Water

all ND

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REPORT OF LABORATORY ANALYSIS

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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QC SAMPLE SUMMARY

lab limits

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380827
QC Batch: Method EPA 3010A

Analysis Method: EPA 6010

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared: 10/04/17 20:40	**MS Analyzed:** 10/05/17 22:30				**MSD Prepared:** 10/04/17 20:40		**MSD Analyzed:** 10/05/17 22:35							
Iron	ug/L	96	94	3	75-125	20	5000	5000	1	1	ND	4820	4700	
Manganese	ug/L	96	93	3	75-125	20	500	500	1	1	99.1	580	564	

Type	Sample	Matrix	Client Sample ID
MS	2110272	Water	
MSD	2110273	Water	
Sample	92357050001	Water	MW-4S

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QC SAMPLE SUMMARY

lab limits

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380827
QC Batch: Method: EPA 3010A

Analysis Method: EPA 6010

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared: 10/04/17 20:40	**LCS Analyzed:** 10/05/17 22:22				**LCSD Prepared:**			**LCSD Analyzed:**		
Iron	ug/L	88			80-120		5000	4400		
Manganese	ug/L	96			80-120		500	480		

Type	Sample	Matrix
LCS	2110271	Water

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REPORT OF LABORATORY ANALYSIS

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ICV/ICB SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	ICV 10/5/2017 20:14 True Conc	Found	% Recov
Fe_259.9	5000	5204	104.1%
Mn_257.6	500	520	104.0%

LL CCV 10/5/2017 20:30 True Conc	Found	% Recov
50	49.5	99.0%
5	4.79	95.8%

ICB 10/5/2017 20:27 Reporting Limit	Found	Qualify
50	0.952	
5	0.061	

<MDLs
No qual

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/5/2017 23:03 True Conc	Found	% Recov	LL CCV 10/5/2017 23:10 True Conc	Found	% Recov	CCB 10/5/2017 23:07 Reporting Limit	Found	Qualify
Fe_259.9	5000	4820	96.4%	50	49.4	98.8%	50	1.12	
Mn_257.6	500	482	96.4%	5	4.69	93.8%	5	-0.044	

<MDL

assoc w/ all samples

No qual

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/5/2017 23:56			LL CCV 10/6/2017 0:03			CCB 10/6/2017 0:00		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4800	96.0%	50	49.7	99.4%	50	1.52	
Mn_257.6	500	480	96.0%	5	4.72	94.4%	5	0.003	

non bracketing

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 0:46			LL CCV 10/6/2017 0:53			CCB 10/6/2017 0:50		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4821	96.4%	50	49.3	98.6%	50	0.703	
Mn_257.6	500	486	97.2%	5	4.77	95.4%	5	-0.003	

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CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 1:36			LL CCV 10/6/2017 1:43			CCB 10/6/2017 1:40		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4865	97.3%	50	48.5	97.0%	50	0.413	
Mn_257.6	500	495	99.0%	5	4.77	95.4%	5	-0.008	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range: ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 2:25			LL CCV 10/6/2017 2:33			CCB 10/6/2017 2:29		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4872	97.4%	50	48.6	97.2%	50	0.422	
Mn_257.6	500	496	99.2%	5	4.81	96.2%	5	0.015	

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CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 3:15			LL CCV 10/6/2017 3:22			CCB 10/6/2017 3:19		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4926	98.5%	50	48.1	96.2%	50	0.274	
Mn_257.6	500	500	100.0%	5	4.72	94.4%	5	-0.002	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 4:02			LL CCV 10/6/2017 4:09			CCB 10/6/2017 4:06		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4828	96.6%	50	48.3	96.6%	50	0.597	
Mn_257.6	500	491	98.2%	5	4.76	95.2%	5	0.033	

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CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 4:51			LL CCV 10/6/2017 4:58			CCB 10/6/2017 4:55		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4880	97.6%	50	47.8	95.6%	50	0.72	
Mn_257.6	500	495	99.0%	5	4.7	94.0%	5	0.04	

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CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 5:42			LL CCV 10/6/2017 5:49			CCB 10/6/2017 5:46		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4957	99.1%	50	48.3	96.6%	50	0.835	
Mn_257.6	500	503	100.6%	5	4.76	95.2%	5	0.054	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 6:30			LL CCV 10/6/2017 6:37			CCB 10/6/2017 6:34		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4901	98.0%	50	48.9	97.8%	50	1.18	
Mn_257.6	500	497	99.4%	5	4.78	95.6%	5	0.065	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 7:19			LL CCV 10/6/2017 7:26			CCB 10/6/2017 7:23		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4680	93.6%	50	45.9	91.8%	50	1.05	
Mn_257.6	500	475	95.0%	5	4.54	90.8%	5	0.064	

Pace Analytical

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 7:53			LL CCV 10/6/2017 8:01			CCB 10/6/2017 7:57		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4691	93.8%	50	46.8	93.6%	50	1.52	
Mn_257.6	500	476	95.2%	5	4.65	93.0%	5	0.079	

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/5/2017 20:33 Found	% Recov
Al_308.2	100000	107158	107.2%
Sb_206.8	5	4.51	
As_188.9	5	-6.56	
Ba_493.4	5	-3.98	
Be_313.0	1	1.31	
B_249.6	50	-47.3	
Cd_214.4	1	0.352	
Ca_315.8	100000	97361	97.4%
Cr_276.6	5	-5.26	
Co_237.8	5	-1.38	
Cu_324.7	5	-3.44	
Fe_259.9	100000	51073	51.1%
Pb_220.3	5	6.32	
Mg_279.0	100000	93051	93.1%
Mn_257.6	5	3.98	
Mo_204.5	5	-2.3	
Ni_231.6	5	6.28	
K_769.8	5000	0	
Se_196.0	10	0.215	
Si_288.1	100	-71.2	
Ag_328.0	5	-0.376	
Na_589.5	1000	0	
Sr_421.5	5	0.733	
Tl_190.7	10	-5.94	
Ti_334.9	5	2.78	
Sn_189.9	5	-4.94	
V_311.8	5	1.43	
Zn_213.8	10	-6.35	

N/A

low interferents in samples
(< 1/2 ICSA true conc);
No impact

Pace Analytical

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA ~~10/5/2017~~ 10/6 ~~20:33~~ 07:29 Found	% Recov
Al_308.2	100000	93147	93.1%
Sb_206.8	5	4.66	
As_188.9	5	-4.66	
Ba_493.4	5	-3.86	
Be_313.0	1	1.59	
B_249.6	50	-37.1	
Cd_214.4	1	0.381	
Ca_315.8	100000	93846	93.8%
Cr_276.6	5	-4.59	
Co_237.8	5	-3.77	
Cu_324.7	5	-3.7	
Fe_259.9	100000	47471	47.5%
Pb_220.3	5	5.11	
Mg_279.0	100000	81562	81.6%
Mn_257.6	5	3.77	<2xRL
Mo_204.5	5	-1.36	
Ni_231.6	5	6.1	
K_769.8	5000	0	
Se_196.0	10	-2.79	
Si_288.1	100	-74.6	
Ag_328.0	5	-0.687	
Na_589.5	1000	0	
Sr_421.5	5	0.408	
Tl_190.7	10	-4.23	
Ti_334.9	5	2.55	
Sn_189.9	5	-4.23	
V_311.8	5	1.74	
Zn_213.8	10	-5.54	

See Rev

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ICP ICSA SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 7:29 Found	% Recov
Al_308.2	100000	93147	93.1%
Sb_206.8	5	4.66	
As_188.9	5	-4.66	
Ba_493.4	5	-3.86	
Be_313.0	1	1.59	
B_249.6	50	-37.1	
Cd_214.4	1	0.381	
Ca_315.8	100000	93846	93.8%
Cr_276.6	5	-4.59	
Co_237.8	5	-3.77	
Cu_324.7	5	-3.7	
Fe_259.9	100000	47471	47.5%
Pb_220.3	5	5.11	
Mg_279.0	100000	81562	81.6%
Mn_257.6	5	3.77	
Mo_204.5	5	-1.36	
Ni_231.6	5	6.1	
K_769.8	5000	0	
Se_196.0	10	-2.79	
Si_288.1	100	-74.6	
Ag_328.0	5	-0.667	
Na_589.5	1000	0	
Sr_421.5	5	0.408	
Tl_190.7	10	-4.23	
Ti_334.9	5	2.55	
Sn_189.9	5	-4.23	
V_311.8	5	1.74	
Zn_213.8	10	-5.54	

N/A

low interferents in samples
(< 1/2 ICSA true conc)

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 8:04 Found	% Recov
Al_308.2	100000	99358	99.4%
Sb_206.8	5	4	
As_188.9	5	-6.06	
Ba_493.4	5	-4.07	
Be_313.0	1	1.67	
B_249.6	50	-39.6	
Cd_214.4	1	-0.008	
Ca_315.8	100000	99395	99.4%
Cr_276.6	5	-4.95	
Co_237.8	5	-3.6	
Cu_324.7	5	-3.88	
Fe_259.9	100000	49926	49.9%
Pb_220.3	5	4.26	
Mg_279.0	100000	86281	86.3%
Mn_257.6	5	3.99	
Mo_204.5	5	-1.98	
Ni_231.6	5	6.01	
K_769.8	5000	0	
Se_196.0	10	-6.21	
Si_288.1	100	-78.3	
Ag_328.0	5	-0.71	
Na_589.5	1000	0	
Sr_421.5	5	0.451	
Tl_190.7	10	-5.42	
Ti_334.9	5	2.67	
Sn_189.9	5	-2.78	
V_311.8	5	1.83	
Zn_213.8	10	-6.12	

non-bracketing

<2xRL

N/A

Iron interferents in samples
(< 1/2 ICSA true conc)
no impact

IDL * By 50

IDLs						10	1
Serial Dilution (SDL)							
		Batch	QC Flag	Dilution:		Fe_259.9	Mn_257.6
Parent:	92357426002	23880		1		1402	36.4
SDL:	92357426002L	23880		5		347	7.28
SDL RPD:						23.75	0.00
QC:						Fail	
Parent:	92357375006	23881		1		1695	540
SDL:	92357375006L	23881		5		352	112
SDL RPD:						3.83	3.70
QC:							
Parent:	92357470005	23864		1		-2.48	0.559
SDL:	92357470005L	23864		5		-2.14	-0.02
SDL RPD:						-331.45	117.89
QC:							
Parent:	92357432002	23872		1		1.55	5152
SDL:	92357432002L	23872		5		-1.25	1099
SDL RPD:						503.23	6.66
QC:							
Parent:	92356882020	23870		1		108	2.21
SDL:	92356882020L	23870		5		20.9	0.377
SDL RPD:						3.24	14.71
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							

N/A Batch QC
non-project

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FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357050

Instrument: Vista Pro

Units: ug/L

% Difference: <10%

Sample No. 92357426002L

Parent Sample ID: 92357426002

Batch: 23880

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	1402	347	5	1735	21.23	10
Mn_257.6	36.4	7.28	5	36.4	0.00	10

N/A

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357050

Instrument: Vista Pro

Units: ug/L

% Difference: <10%

Sample No. 92357375006L

Parent Sample ID: 92357375006

Batch: 23881

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	1695	352	5	1760	3.76	10
Mn_257.6	540	112	5	560	3.64	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357050

Instrument: Vista Pro

Units: ug/L

% Difference: <10%

Sample No. 92357470005L

Parent Sample ID: 92357470005

Batch: 23864

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	-2.48	-2.14	5	-10.7	124.73	10
Mn_257.6	0.559	-0.02	5	-0.1	287.15	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357050

Instrument: Vista Pro

Units: ug/L

% Difference: <10%

Sample No. 92357432002L

Parent Sample ID: 92357432002

Batch: 23872

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	1.55	-1.25	5	-6.25	331.91	10
Mn_257.6	5152	1099	5	5495	6.44	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357050

Instrument: Vista Pro

Units: ug/L

% Difference: <10%

Sample No. 92356882020L

Parent Sample ID: 92356882020

Batch: 23870

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	108	20.9	5	104.5	3.29	10
Mn_257.6	2.21	0.377	5	1.885	15.87	10

N/A

Pace Analytical

ICP IEC SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Date of IEC's: 5/4/2017

	Al 308.215	Ba 493.408	Ca 315.887	Cd 226.502	Co 237.863	Cr 267.653	Cu 324.754	Fe 259.940	Mg 279.078	Mn 257.610	Mo 204.598	Ni 231.604	Si 288.158	Sn 189.927	Ti 334.941	V 311.837
Ag 328.068	0	0.000003	0.000004	0	0.000002	0.000019	0.000003	0.000003	0	0.000244	-0.000125	-0.000008	-0.000002	-0.000006	0.000039	-0.001134
As 188.980	0.000033	0.000444	0.000029	0.000336	0.000191	0.001092	0.000616	-0.000174	0.000049	0.000162	0.000684	0.000289	0.000043	0.000302	0.000288	0.000576
Co 237.863	-0.001145	0.000102	0	0.000002		0.000085	0.000034	0.00253	-0.000005	0.000021	0.000179	-0.000035	0.000031	-0.000006	-0.000047	-0.000049
Cr 276.653	0.000001	-0.000058	0.00001	-0.000074	-0.00129		-0.005209	0.000083	0.000002	-0.000032	-0.001217	-0.000086	-0.000011	-0.000019	-0.000069	0.006443
Se 196.026	0.000022	0.000133	-0.000013	-0.000209	-0.000279	-0.000537	-0.000047	0.000071	0.000029	0.0002	0.000294	-0.000279	-0.000018	-0.000129	-0.000412	0.000046
Zn 213.857	0.000045	-0.00009	0.000001	0.000015	0.00009	-0.000021	0.004329	0.000201	0.000006	0.000003	0.00001	0.005711	0.000067	0.000015	0.000045	0.000001
B 249.678	0.000082	0.000461	0.000034	0.000289	0.001615	0.000496	0.000202	-0.000882	0.000025	0.000202	0.000006	0.000125	0.000888	0.000432	0.000312	0.000106
Ba 493.408	0.000002		0.000025	0.000034	0.000009	0.000005	0.000005	0.000003	0	0	-0.000004	-0.000001	0.000001	0	0	-0.000005
Be 313.042	-0.000002	-0.000013	-0.000003	-0.000011	-0.000012	-0.000022	-0.000021	-0.000003	-0.000004	-0.000025	-0.000025	-0.000031	-0.000005	-0.000026	-0.000084	0.00017
Cd 214.439	-0.000024	0.000004	0.000018		-0.000003	0.000031	-0.000023	0.00005	0.000001	-0.000005	-0.000039	-0.000046	0.000001	-0.000013	-0.000012	-0.000005
Cu 324.754	0.000008	0.000044	0.000005	0.000015	0.00002	0.000039		0.000001	0.000009	0.000034	0.000548	0.000304	0.000007	0.000043	0.000016	-0.00001
Mn 257.610	-0.000002	0.000006	0	0.000004	-0.000001	-0.000036	0.000015	-0.00001	0.000001		0.000033	0.000009	0.000001	0.000009	0.000016	0.000001
Mo 204.598	0.000054	0.000004	-0.000007	-0.000044	0.000002	-0.000068	-0.000105	-0.0001	-0.000008	-0.000062		-0.006959	0.000091	-0.000435	0.000217	0.000002
Ni 231.604	-0.000003	-0.000113	-0.00002	0.000024	-0.00038	-0.000046	0.000042	-0.000024	-0.000012	-0.000118	-0.00011		-0.000051	0.000038	0.000071	-0.000047
Pb 220.353	-0.000052	-0.000324	-0.000014	-0.000209	-0.00022	-0.000238	-0.000421	0.00042	-0.000038	-0.000151	-0.001728	-0.000256	-0.000104	-0.000148	-0.000219	-0.000401
Sb 206.834	0.000001	-0.000082	-0.000018	-0.000016	-0.000111	0.000555	-0.000201	0.000085	-0.00002	-0.000071	-0.002755	-0.000095	-0.000012	0.000019	-0.000044	-0.00008
Si 288.158	0.000162	0.000587	0.000175	0.000168	0.000364	0.000321	0.000979	0.00008	0.000152	0.001815	-0.00064	0.001011		0.007584	0.006431	0.009585
Sn 189.927	-0.000001	-0.000135	-0.00001	0.000253	0.000439	0.000219	0.000386	0.00003	0.000018	0.000315	0.000227	-0.000077	0.000006		-0.004076	0.000327
Sr 421.552	0	0.000001	0.000017	-0.000006	-0.000001	-0.000005	0.000003	0	-0.000001	-0.000006	-0.000006	-0.000006	-0.000001	-0.000006	-0.000005	-0.000005
Ti 334.941	0.000002	0.000006	0	0.000003	-0.000003	-0.00024	-0.000005	0	0	0.000002	-0.000021	0.000001	0.000005	0.000004		0.000407
Tl 190.794	0.000001	0.000048	0.00001	0.000088	-0.005662	0.000177	0.000163	0.000014	0.000002	-0.000313	0.000115	0.000047	0.000016	0.000043	-0.001839	-0.000656
V 311.837	-0.000005	-0.000001	0	0.000008	-0.000005	-0.000317	0.000019	-0.000002	-0.000004	-0.00015	-0.000006	-0.000028	0.000002	-0.000031	-0.001586	
Al 308.215		0.002599	0.000097	0.000397	0.000467	0.000901	0.000798	0.000073	0.000079	0.000429	0.00452	0.000777	0.000426	0.00075	0.000975	0.018952
Ca 315.887	-0.001766	-0.005999		-0.00543	-0.003745	-0.007478	0.014507	-0.000799	-0.000914	-0.007406	-0.004071	-0.008144	-0.001533	-0.007672	-0.007124	-0.007029
Fe 259.940	0.000037	0.000036	-0.000004	-0.000015	-0.000019	0.000465	0.000059		0.000248	-0.000153	-0.000452	0.000004	0.000192	0.000019	0.000127	0.000112
Mg 279.078	0.000036	0.000061	0.00003	0.000226	0.0001	-0.000175	0.000303	-0.000112		0.000449	-0.005654	0.000141	0.00003	0.000251	-0.003112	0.000024
K 269.897	0.001095	0.000656	0.000922	0.000462	0.000892	0.001229	0.001741	0.002422	0.001091	0.001578	0.001068	0.001609	0.000281	0.001102	0.001597	0.001592
Na 589.592	0.005135	0.663684	0.000074	0.000144	0.000235	0.000058	0.000944	0.000054	0.00001	0.000016	0.000595	0.000202	0.000658	0.000156	0.000331	0.000002

Pace Analytical™

ICP LINEAR RANGE SUMMARY

Lab Project Number / SDG: 92357050

Instrument: Vista Pro

Units: ug/L

Element	Linear Range	Date of LR
Aluminum	10000	6/23/2017
Antimony	10000	6/23/2017
Arsenic	10000	6/23/2017
Barium	5000	6/23/2017
Beryllium	5000	6/23/2017
Boron	10000	6/23/2017
Cadmium	10000	6/23/2017
Calcium	100000	6/23/2017
Chromium	10000	6/23/2017
Cobalt	10000	6/23/2017
Copper	10000	6/23/2017
Iron	50000	6/23/2017
Lead	10000	6/23/2017
Magnesium	100000	6/23/2017
Manganese	10000	6/23/2017
Molybdenum	10000	6/23/2017
Nickel	10000	6/23/2017
Potassium	100000	6/23/2017
Selenium	10000	6/23/2017
Silver	50000	6/23/2017
Silicon	5000	6/23/2017
Sodium	90000	6/23/2017
Strontium	5000	6/23/2017
Thallium	10000	6/23/2017
Tin	10000	6/23/2017
Titanium	10000	6/23/2017
Vanadium	10000	6/23/2017
Zinc	10000	6/23/2017

RUN LOG

92ICP4 Run Log

Analytical Run: 20171005.csv Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/5/2017	19:48:28	Blank	1		
10/5/2017	19:51:40	5 STD	1		
10/5/2017	19:55:00	500 STD	1		
10/5/2017	19:59:56	1000 STD	1		
10/5/2017	20:14:29	ICV	1		
10/5/2017	20:27:25	ICB	1		
10/5/2017	20:30:24	LL CCV	1		
10/5/2017	20:33:44	ICSA	1		
10/5/2017	22:19:23	2110270 MB	1		23880
10/5/2017	22:22:19	2110271 LCS	1		23880
10/5/2017	22:27:13	92357050001	1		23880
10/5/2017	22:30:41	2110272 MS	1		23880
10/5/2017	22:35:08	2110273 MSD	1		23880
10/5/2017	22:43:44	92357050002	1		23880
10/5/2017	22:47:46	92357050003	1		23880
10/5/2017	22:51:33	92357250009	1		23880
10/5/2017	22:55:38	92357250010	1		23880
10/5/2017	22:59:49	92357250011	1		23880
10/5/2017	23:03:45	CCV	1		
10/5/2017	23:07:41	CCB	1		
10/5/2017	23:10:40	LL CCV	1		
10/5/2017	23:14:03	92357250012	1		23880
10/5/2017	23:18:29	92357250013	1		23880
10/5/2017	23:22:56	92357250014	1		23880
10/5/2017	23:27:45	92357250015	1		23880
10/5/2017	23:31:45	92357250016	1		23880
10/5/2017	23:35:56	92357250017	1		23880
10/5/2017	23:40:08	92357250018	1		23880
10/5/2017	23:44:27	92357250019	1		23880
10/5/2017	23:48:38	92357250020	1		23880
10/5/2017	23:52:55	92357250028	1		23880
10/5/2017	23:56:46	CCV	1		
10/6/2017	0:00:26	CCB	1		
10/6/2017	0:03:43	LL CCV	1		
10/6/2017	0:07:07	92357250029	1		23880
10/6/2017	0:11:17	92357250030	1		23880
10/6/2017	0:15:35	92357426001	1		23880
10/6/2017	0:19:31	92357426002	1		23880
10/6/2017	0:23:38	92357426002L	5		23880
10/6/2017	0:27:06	92357050002	10		23880
10/6/2017	0:30:34	2110295	1		23881
10/6/2017	0:33:32	2110296	1		23881
10/6/2017	0:37:08	92356898001	1		23881
10/6/2017	0:41:05	2110297	1		23881
10/6/2017	0:46:03	CCV	1		
10/6/2017	0:50:35	CCB	1		

92ICP4 Run Log

Analytical Run: 20171005.csv Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	0:53:54	LL CCV	1		
10/6/2017	0:57:18	2110298	1		23881
10/6/2017	1:01:20	92356901001	1		23881
10/6/2017	1:06:15	92356903001	1		23881
10/6/2017	1:10:59	92356905001	1		23881
10/6/2017	1:14:30	92357107001	1		23881
10/6/2017	1:18:01	92357110001	1		23881
10/6/2017	1:21:38	92357118001	1		23881
10/6/2017	1:25:19	35337759001	1		23881
10/6/2017	1:28:57	35337758001	1		23881
10/6/2017	1:32:33	35337756001	1		23881
10/6/2017	1:36:11	CCV	1		
10/6/2017	1:40:06	CCB	1		
10/6/2017	1:43:28	LL CCV	1		
10/6/2017	1:46:57	92357375001	1		23881
10/6/2017	1:50:37	2110299	1		23881
10/6/2017	1:54:49	2110300	1		23881
10/6/2017	1:59:42	92357375002	1		23881
10/6/2017	2:04:34	92357375003	1		23881
10/6/2017	2:08:14	92357375004	1		23881
10/6/2017	2:11:54	92357375005	1		23881
10/6/2017	2:15:36	92357375006	1		23881
10/6/2017	2:19:19	92357375006L	5		23881
10/6/2017	2:22:51	2110295	1		23881
10/6/2017	2:25:49	CCV	1		
10/6/2017	2:29:58	CCB	1		
10/6/2017	2:33:18	LL CCV	1		
10/6/2017	2:36:46	2109122	1		23864
10/6/2017	2:39:45	2109123	1		23864
10/6/2017	2:43:47	92356755008	1		23864
10/6/2017	2:47:21	2109124	1		23864
10/6/2017	2:52:17	2109125	1		23864
10/6/2017	2:56:28	92356757001	1		23864
10/6/2017	3:00:33	92356757002	1		23864
10/6/2017	3:04:22	35337453001	1		23864
10/6/2017	3:08:00	92357064002	10		23864
10/6/2017	3:11:41	92357064003	1		23864
10/6/2017	3:15:46	CCV	1		
10/6/2017	3:19:37	CCB	1		
10/6/2017	3:22:57	LL CCV	1		
10/6/2017	3:26:22	92357338001	1		23864
10/6/2017	3:29:57	92357338002	1		23864
10/6/2017	3:33:32	92357470001	1		23864
10/6/2017	3:37:06	92357470002	1		23864
10/6/2017	3:40:38	92357470003	1		23864
10/6/2017	3:44:08	2109126	1		23864
10/6/2017	3:47:54	2109127	1		23864
10/6/2017	3:52:09	92357470004	1		23864
10/6/2017	3:55:42	92357470005	1		23864

92ICP4 Run Log

Analytical Run: 20171005.csv Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	3:59:15	92357470005L	5		23864
10/6/2017	4:02:45	CCV	1		
10/6/2017	4:06:29	CCB	1		
10/6/2017	4:09:48	LL CCV	1		
10/6/2017	4:13:15	2110928	1		23872
10/6/2017	4:16:34	2110929	1		23872
10/6/2017	4:20:35	92357274001	1		23872
10/6/2017	4:24:11	2110930	1		23872
10/6/2017	4:28:06	2110931	1		23872
10/6/2017	4:32:38	92357381001	1		23872
10/6/2017	4:36:12	92357381002	1		23872
10/6/2017	4:39:48	92357427001	1		23872
10/6/2017	4:43:46	92357269001	1		23872
10/6/2017	4:47:45	92357500001	1		23872
10/6/2017	4:51:22	CCV	1		
10/6/2017	4:55:25	CCB	1		
10/6/2017	4:58:45	LL CCV	1		
10/6/2017	5:02:11	92357432001	1		23872
10/6/2017	5:06:16	92357432002	1		23872
10/6/2017	5:11:02	92357432002L	5		23872
10/6/2017	5:14:40	2109945	1		23870
10/6/2017	5:17:56	2109946	1		23870
10/6/2017	5:21:55	92356882001	1		23870
10/6/2017	5:25:52	2109947	1		23870
10/6/2017	5:30:05	2109948	1		23870
10/6/2017	5:34:32	92356882002	1		23870
10/6/2017	5:38:21	92356882003	1		23870
10/6/2017	5:42:10	CCV	1		
10/6/2017	5:46:22	CCB	1		
10/6/2017	5:49:41	LL CCV	1		
10/6/2017	5:53:08	92356882004	1		23870
10/6/2017	5:56:54	92356882005	1		23870
10/6/2017	6:00:33	92356882006	1		23870
10/6/2017	6:04:12	92356882007	1		23870
10/6/2017	6:07:50	92356882008	1		23870
10/6/2017	6:11:30	92356882009	1		23870
10/6/2017	6:15:19	92356882010	1		23870
10/6/2017	6:19:02	92356882011	1		23870
10/6/2017	6:22:38	2109949	1		23870
10/6/2017	6:26:22	2109950	1		23870
10/6/2017	6:30:11	CCV	1		
10/6/2017	6:34:20	CCB	1		
10/6/2017	6:37:39	LL CCV	1		
10/6/2017	6:41:06	92356882012	1		23870
10/6/2017	6:44:52	92356882013	1		23870
10/6/2017	6:48:31	92356882014	1		23870
10/6/2017	6:52:16	92356882015	1		23870
10/6/2017	6:56:56	92356882016	1		23870
10/6/2017	7:00:47	92356882017	1		23870

92ICP4 Run Log

Analytical Run: 20171005.csv Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	7:04:36	92356882018	1		23870
10/6/2017	7:08:20	92356882019	1		23870
10/6/2017	7:11:55	92356882020	1		23870
10/6/2017	7:15:35	92356882020L	5		23870
10/6/2017	7:19:10	CCV	1		
10/6/2017	7:23:01	CCB	1		
10/6/2017	7:26:22	LL CCV	1		
10/6/2017	7:29:50	ICSA	1		
10/6/2017	7:33:49	2109706	1		23863
10/6/2017	7:36:49	2109707	1		23863
10/6/2017	7:40:29	92356545001	10000		23863
10/6/2017	7:43:49	2109708	10000		23863
10/6/2017	7:47:11	2109709	10000		23863
10/6/2017	7:50:34	92356545002	10000		23863
10/6/2017	7:53:53	CCV	1		
10/6/2017	7:57:41	CCB	1		
10/6/2017	8:01:01	LL CCV	1		
10/6/2017	8:04:32	ICSA	1		

Pace Analytical

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

ICP Spike Solution Ref. #:	25919	0.15 mL used	**Test: ICP**
race Grade Nitric Acid Ref. #:	16212	0.30 mL used	
Trace Grade HCL Acid Ref. #:	16342 KB 10/4/16 3013	0.75mL used	Method: Total Metals i Spike Witness: JMW
Analyst:	KCB	(Circle) Pipette ID Used: 9A 37 53 57 90 Other: 100	
Date Digested:	10/4/17	Thermometer ID or Serial Number: MT 4	
Matrix:	Water	Time In: 2040	Time Out: 2440
Batch#:	MPRP27802	HotBlock Used: 7	
Tube SS #/Filter SS#:		HotBlock Temp°C 91.2 (90-95 °C)	
Digestion Cup ID #	16388	Centrifuged: Yes / No	
Circle Balanced Used :	#1 or #6	Balance: ID: #1 Mettler PE 400 SN:B29715 ID: #6 Mettler PJ 300, SN 111088	

* If any samples are filtered, MB and LCS must also be filtered

Sample Number	Sample I.D.	WT Sample VL is always 15 mL unless otherwise noted.	Final Volume is always 15 mL unless otherwise noted.	Samples Not Filtered unless a Y is noted*	Analyst initials / Date Filtered
2110270	BLANK for HBN 380827 [MPRP/278				
2110271	LCS for HBN 380827 [MPRP/27802				
92357050001	MW-4S				
2110272	MW-4S(2105297MS)				
2110273	MW-4S(2105297MSD)				
92357050002	MW-5S				
92357050003	MW-6S				
92357250009	MW-09				
92357250010	MW-10				
92357250011	MW-11				
92357250012	MW-12				
92357250013	MW-13				
92357250014	MW-14				
92357250015	MW-15				
92357250016	MW-16				
92357250017	MW-17				
92357250018	MW-18				
92357250019	DUP-A				
92357250020	DUP-B				
92357250028	RW-01				
92357250029	RW-02				
92357250030	RW-03				
92357426001	MW-2				
92357426002	MW-3				
		KB 10/4/17			

Carolina Benchsheet Version 7.1

Metals Batch Summary Form

Method: Total Metals by 3010A/6010D

All QC is acceptable unless noted below

Complete and Ready for Validation: [illegible]

MPRP/MERP Batch: 27802

ICP/ICPW/MERC Batch: 23880

Initial ICP Run Date: 10/5/17

Circle Initial Instrument: 92ICP3 92ICP4 92ICM2 92ICM3 HG4 HG1

Sample #:	Instrument Issue	LCS	MB	Internal Std	CCV	LLCCV	CCB	Dilutions	Rerun Date	Rerun Instrument	Comment
2110270											
2110271											
92357050001											
2110272											
2110273											
92357050002											
92357050003											
92357250009											
92357250010											
92357250011											
92357250012											
92357250013											
92357250014											
92357250015											
92357250016											
92357250017											
92357250018											
92357250019											
92357250020											
92357250028											
92357250029											
92357250030											
92357426001											
92357426002											

Carolina Benchsheet Version 7.1

20171005. All Data Report 10/6/2017, 8:59:48 AM

Co 237.863 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999722**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		9.12	0.000	0.014	-	-
5 STD		37.1	5.00	4.66	-0.337	-6.7
500 STD		2971	500	491	-8.74	-1.7
1000 STD		6216	1000	1030	29.7	3.0

Curve Type: Linear Equation: y = 6.0 x + 9.0

Cr 276.653 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999700**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		-0.804	0.000	0.186	-	-
5 STD		36.0	5.00	4.94	-0.065	-1.3
500 STD		3789	500	489	-10.9	-2.2
1000 STD		7957	1000	1027	26.8	2.7

Curve Type: Linear Equation: y = 7.8 x + -2.2

Cu 324.754 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999546**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		252	0.000	0.127	-	-
5 STD		603	5.00	4.87	-0.134	-2.7
500 STD		35645	500	479	-20.9	-4.2
1000 STD		75424	1000	1017	17.5	1.7

Curve Type: Linear Equation: y = 73.9 x + 243.1

Fe 259.940 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999882**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		26.4	0.000	0.634	-	-
5 STD		506	50.0	49.9	-0.104	-0.2
500 STD		48011	5000	4928	-71.5	-1.4
1000 STD		98944	10000	10159	159	1.6

Curve Type: Linear Equation: y = 9.7 x + 20.2

K 769.897 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.995199**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		3987	0.000	0.011	-	-
500 STD		172370	5000	4608	-392	-7.8
1000 STD		409893	10000	11107	1107	11.1

Correlation coefficient limit exceeded.
Curve Type: Linear Equation: y = 36.5 x + 3986.6

20171005. All Data Report 10/6/2017, 8:59:48 AM

Mg 279.078 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999725**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		-4.35	0.000	1.88	-	-
5 STD		213	100	96.0	-3.98	-4.0
500 STD		11085	5000	4811	-189	-3.8
1000 STD		23231	10000	10079	78.8	0.8

Curve Type: Linear Equation: y = 2.3 x + -8.7

Mn 257.610 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999831**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		24.3	0.000	0.029	-	-
5 STD		492	5.00	4.78	-0.218	-4.4
500 STD		48551	500	493	-7.25	-1.4
1000 STD		100674	1000	1022	22.0	2.2

Curve Type: Linear Equation: y = 98.5 x + 21.5

Mo 204.598 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999465**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		0.203	0.000	0.143	-	-
5 STD		9.37	5.00	4.91	-0.087	-1.7
500 STD		952	500	495	-4.55	-0.9
1000 STD		2033	1000	1058	57.7	5.8

Curve Type: Linear Equation: y = 1.9 x + -0.1

Na 589.592 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.996752**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		537	0.000	232	-	-
5 STD		200237	1000	1037	36.6	3.7
500 STD		1052555	5000	4470	-530	-10.6
1000 STD		2490347	10000	10261	261	2.6

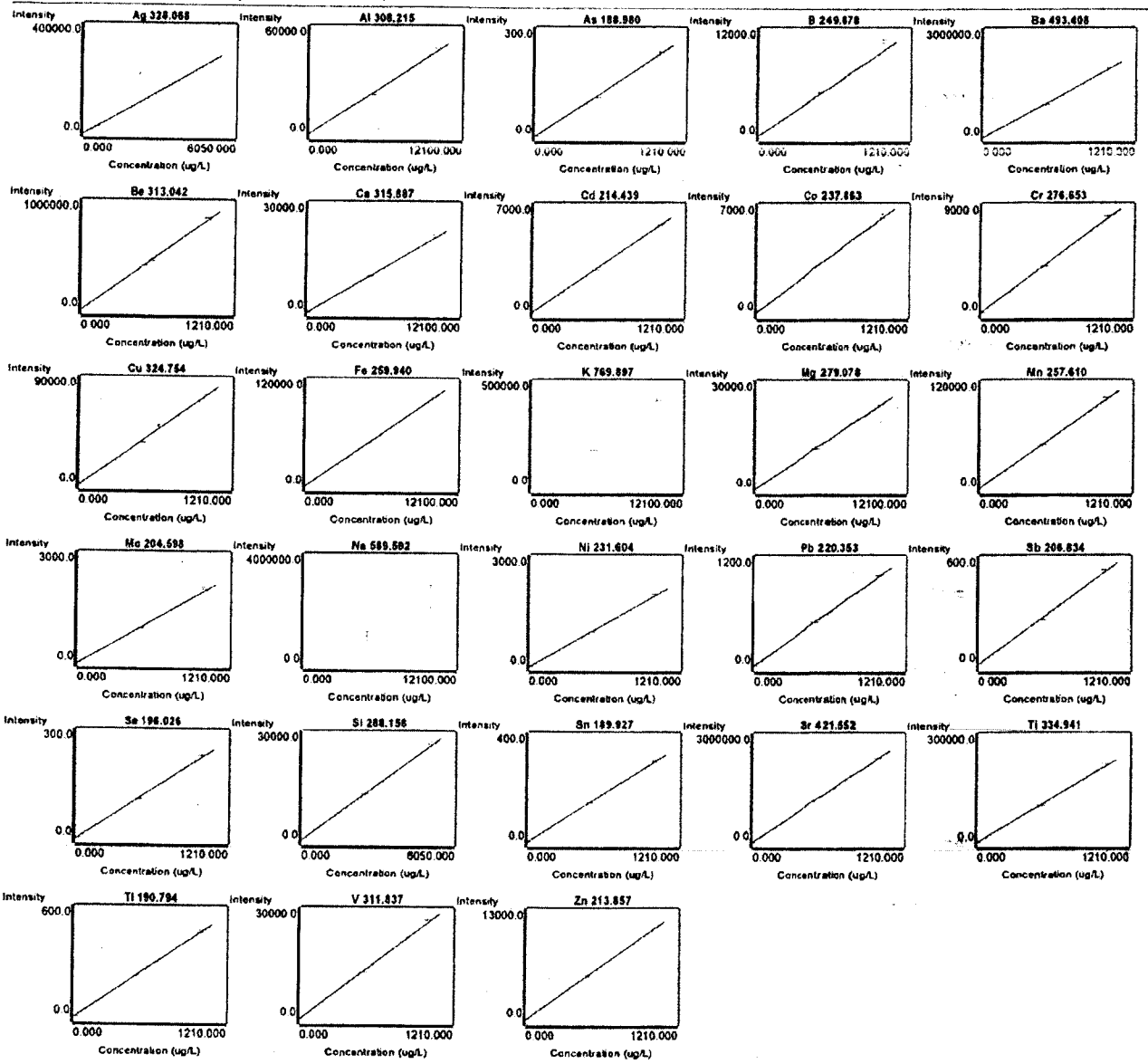
Correlation coefficient limit exceeded.
Curve Type: Linear Equation: y = 248.3 x + -57098.5

Ni 231.604 Calibration (ug/L) **10/5/2017, 7:59:56 PM** **Correlation Coefficient: 0.999735**

Label	Flags	Int. (c/s)	Std Conc.	Calc Conc.	Error	%Error
Blank		-0.485	0.000	0.038	-	-
5 STD		8.43	5.00	4.71	-0.294	-5.9
500 STD		936	500	490	-9.80	-2.0
1000 STD		1961	1000	1026	26.2	2.6

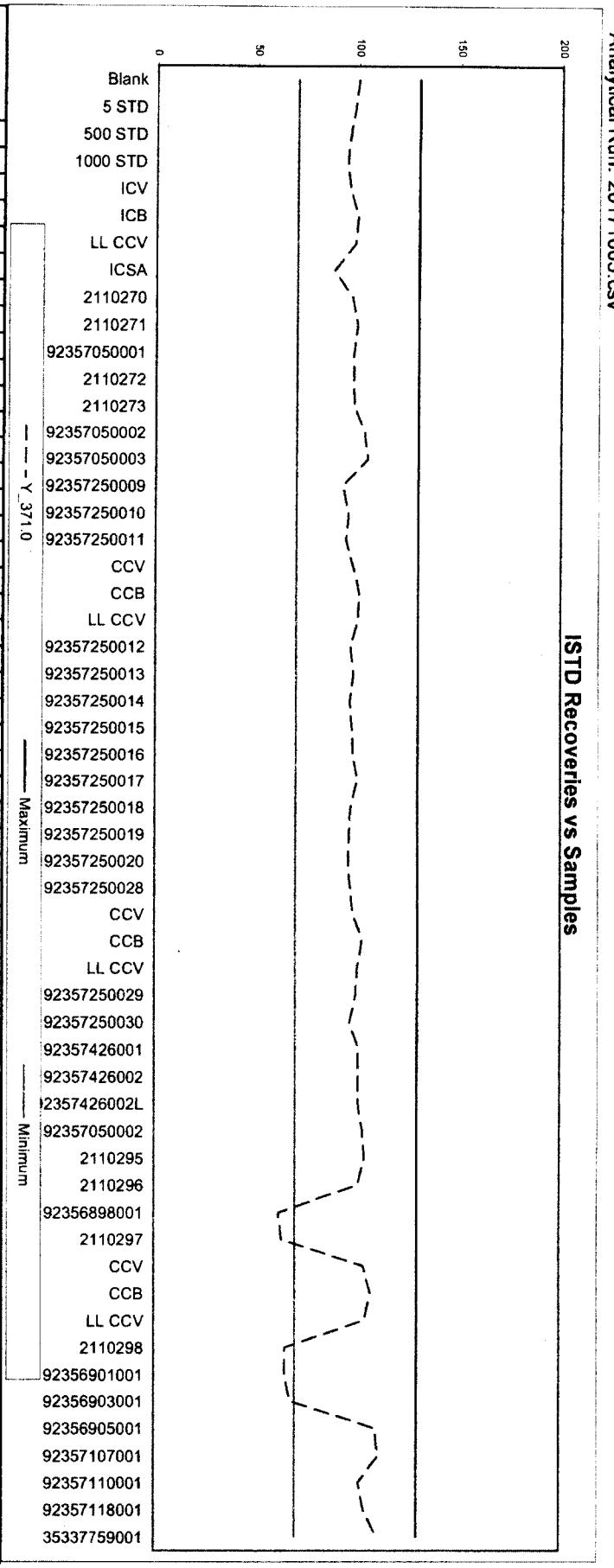
Curve Type: Linear Equation: y = 1.9 x + -0.6

20171005. All Data Report 10/6/2017, 8:59:48 AM



Analytical Run: 20171005.csv

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Date/Time
1	Blank	1	70	130	100	10/5/2017 19:48
2	5 STD	1	70	130	98.25	10/5/2017 19:51
3	500 STD	1	70	130	96.07	10/5/2017 19:55
4	1000 STD	1	70	130	94.71	10/5/2017 19:59
5	ICV	1	70	130	95.99	10/5/2017 20:14
6	ICB	1	70	130	99.93	10/5/2017 20:27
7	LL CCV	1	70	130	98.75	10/5/2017 20:30
8	ICSA	1	70	130	88.4	10/5/2017 20:33
9	2110270	1	70	130	97.37	10/5/2017 22:19
10	2110271	1	70	130	99.97	10/5/2017 22:22
11	92357050001	1	70	130	97.91	10/5/2017 22:27
12	2110272	1	70	130	98.03	10/5/2017 22:30
13	2110273	1	70	130	98.54	10/5/2017 22:35
14	92357050002	1	70	130	103.5	10/5/2017 22:43
15	92357050003	1	70	130	105.3	10/5/2017 22:47
16	92357250009	1	70	130	92.82	10/5/2017 22:51
17	92357250010	1	70	130	95.73	10/5/2017 22:55
18	92357250011	1	70	130	94.6	10/5/2017 22:59
19	CCV	1	70	130	98.06	10/5/2017 23:03
20	CCB	1	70	130	101.3	10/5/2017 23:07
21	LL CCV	1	70	130	100.5	10/5/2017 23:10
22	92357250012	1	70	130	97.01	10/5/2017 23:14
23	92357250013	1	70	130	98.32	10/5/2017 23:18
24	92357250014	1	70	130	96.48	10/5/2017 23:22
25	92357250015	1	70	130	97.51	10/5/2017 23:27
26	92357250016	1	70	130	98.25	10/5/2017 23:31
27	92357250017	1	70	130	100.2	10/5/2017 23:35
28	92357250018	1	70	130	97.07	10/5/2017 23:40
29	92357250019	1	70	130	96.34	10/5/2017 23:44
30	92357250020	1	70	130	96.08	10/5/2017 23:48
31	92357250028	1	70	130	97.02	10/5/2017 23:52
32	CCV	1	70	130	98.5	10/5/2017 23:56
33	CCB	1	70	130	103	10/6/2017 0:00
34	LL CCV	1	70	130	100.5	10/6/2017 0:03
35	92357250029	1	70	130	99.79	10/6/2017 0:07
36	92357250030	1	70	130	96.91	10/6/2017 0:11
37	92357426001	1	70	130	101.2	10/6/2017 0:15
38	92357426002	1	70	130	100.9	10/6/2017 0:19
39	92357426002L	5	70	130	101	10/6/2017 0:23
40	92357050002	10	70	130	103.3	10/6/2017 0:27
41	2110295	1	70	130	104.3	10/6/2017 0:30
42	2110296	1	70	130	101.1	10/6/2017 0:33
43	92356898001	1	70	130	61.71	10/6/2017 0:37
44	2110297	1	70	130	63.45	10/6/2017 0:41
45	CCV	1	70	130	103.9	10/6/2017 0:46
46	CCB	1	70	130	107.4	10/6/2017 0:50
47	LL CCV	1	70	130	104.3	10/6/2017 0:53
48	2110298	1	70	130	64.98	10/6/2017 0:57
49	92356901001	1	70	130	64.94	10/6/2017 1:01
50	92356903001	1	70	130	67.95	10/6/2017 1:06
51	92356905001	1	70	130	109.5	10/6/2017 1:10
52	92357107001	1	70	130	111.3	10/6/2017 1:14
53	92357110001	1	70	130	101.5	10/6/2017 1:18
54	92357118001	1	70	130	104.1	10/6/2017 1:21
55	35337759001	1	70	130	110.7	10/6/2017 1:25



Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 381457
QC Batch: Method: SM 5310B
Analysis Method: SM 5310B
Associated Lab Samples: 92357050001, 92357050002, 92357050003

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
7440-44-0	Total Organic Carbon	ND	mg/L	1.0	10/09/17 12:37	

Type	Sample	Matrix
BLANK	2113870	Water

ND

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, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 381457
QC Batch: Method: SM 5310B
Analysis Method: SM 5310B

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD	QC Limits LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:		**LCS Analyzed:** 10/09/17 13:01			**LCSD Prepared:**				**LCSD Analyzed:**		
Total Organic Carbon	mg/L	97			90-110			25	24.2		

Type	Sample	Matrix
LCS	2113871	Water

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Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 381457
QC Batch: Method SM 5310B

Analysis Method: SM 5310B

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	10/09/17 13:30		**MSD Prepared:**				**MSD Analyzed:**	10/09/17 13:42					
Total Organic Carbon	mg/L	92	92	0	90-110	10	25	25	1	1	2.7	25.7	25.8	

Type	Sample	Matrix	Client Sample ID
MS	2113872	Water	
MSD	2113873	Water	
Sample	92357050001	Water	MW-4S

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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C:\TOC3201\Data\2017_10_09_001.t32 WETA 33690 TOC 10/9/17 KDF MDL=0.3

	Type	Analysi	Sample Name	Sample ID	Origin	Result	Com	Status	Date / Time	Vial
1	Stand	NPOC	ww50cal	ww50cal	NPOC50pp			Comp	10/2/2017 6:36:30	68, 68,
2	Contro	NPOC	icv25	icv25	ICV.tpl	NPOC:23.92mg/L	95%	Comp	10/2/2017 6:54:57	66
3	Contro	NPOC	icb	icb	ICB.tpl	NPOC:-0.06752m		Comp	10/2/2017 7:07:01	67
4	Contro	NPOC	ccv	ccv25	CCV.tpl	NPOC:25.41mg/L	101%	Comp	10/9/2017 11:40:2	1
5	Contro	NPOC	ccb	ccb	CCB.tpl	NPOC:-0.2098mg/		Comp	10/9/2017 11:50:2	2
6	Contro	NPOC	1.0std	1.0std	1.0std.tpl	NPOC:1.014mg/L	101%	Comp	10/9/2017 12:04:5	3
7	Unkno	NPOC	Na2CO3 Check	check	NPOC50pp	NPOC:-0.2193mg/		Comp	10/9/2017 12:17:2	4
8	Unkno	NPOC	2113870 b/c	WETA_33690	NPOC50pp	NPOC:-0.2155mg/		Comp	10/9/2017 12:37:0	2
9	Unkno	NPOC	2113871	WETA_33690	NPOC50pp	NPOC:24.23mg/L	96%	Comp	10/9/2017 1:01:29	1
10	Unkno	NPOC	92357050001	WETA_33690	NPOC50pp	NPOC:2.744mg/L		Comp	10/9/2017 1:18:55	5
11	Unkno	NPOC	2113872	WETA_33690	NPOC50pp	NPOC:25.71mg/L		Comp	10/9/2017 1:30:49	6
12	Unkno	NPOC	2113873	WETA_33690	NPOC50pp	NPOC:25.80mg/L		Comp	10/9/2017 1:42:53	7
13	Unkno	NPOC	92357050002	WETA_33690	NPOC50pp	NPOC:0.8971mg/		Comp	10/9/2017 1:57:26	8
14	Unkno	NPOC	92357050003	WETA_33690	NPOC50pp	NPOC:1.896mg/L		Comp	10/9/2017 2:07:47	9
15	Unkno	NPOC	92357284001	WETA_33690	NPOC50pp	NPOC:4.721mg/L		Comp	10/9/2017 2:18:14	10
16	Contro	NPOC	ccv	ccv25	CCV.tpl	NPOC:23.46mg/L	93%	Comp	10/9/2017 2:30:13	11
17	Contro	NPOC	ccb	ccb	CCB.tpl	NPOC:-0.2186mg/		Comp	10/9/2017 2:44:17	12
18	Unkno	NPOC	Na2CO3 Check	check	NPOC50pp	NPOC:-0.1385mg/		Comp	10/9/2017 2:54:38	13
19*	Unkno	NPOC	2113866	WETA_33689	NPOC50pp			Defin		12
20*	Unkno	NPOC	2113867	WETA_33689	NPOC50pp			Defin		11
21*	Unkno	NPOC	92357790001	WETA_33689	NPOC50pp			Defin		14
22*	Unkno	NPOC	2113868	WETA_33689	NPOC50pp			Defin		15
23*	Unkno	NPOC	2113869	WETA_33689	NPOC50pp			Defin		16
24*	Unkno	NPOC	92357790002	WETA_33689	NPOC50pp			Defin		17
25*	Unkno	NPOC	92357790003	WETA_33689	NPOC50pp			Defin		18
26*	Unkno	NPOC	92357790004	WETA_33689	NPOC50pp			Defin		19
27*	Unkno	NPOC	92357790005	WETA_33689	NPOC50pp			Defin		20
28*	Contro	NPOC	ccv	ccv25	CCV.tpl			Defin		21
29*	Contro	NPOC	ccb	ccb	CCB.tpl			Defin		22
30*	Unkno	NPOC	NaCO3 Check	check	NPOC50pp			Defin		23
31*	Unkno	NPOC	2113281	WETA_33682	NPOC50pp			Defin		22
32*	Unkno	NPOC	2113283	WETA_33682	NPOC50pp			Defin		21
33*	Unkno	NPOC	92357169015	WETA_33682	NPOC50pp			Defin		24
34*	Unkno	NPOC	2113284	WETA_33682	NPOC50pp			Defin		25
35*	Unkno	NPOC	2113285	WETA_33682	NPOC50pp			Defin		26
36*	Unkno	NPOC	92357169016	WETA_33682	NPOC50pp			Defin		27
37*	Unkno	NPOC	92357169017	WETA_33682	NPOC50pp			Defin		28
38*	Unkno	NPOC	92357169018	WETA_33682	NPOC50pp			Defin		29
39*	Unkno	NPOC	92357169019	WETA_33682	NPOC50pp			Defin		30
40*	Contro	NPOC	ccv	ccv25	CCV.tpl			Defin		31
41*	Contro	NPOC	ccb	ccb	CCB.tpl			Defin		32
42*	Unkno	NPOC	92357338001	WETA_33682	NPOC50pp			Defin		33
43*	Unkno	NPOC	92357338002	WETA_33682	NPOC50pp			Defin		34
44*	Unkno	NPOC	92356484001	WETA_33682	NPOC50pp			Defin		35
45*	Unkno	NPOC	92356484002	WETA_33682	NPOC50pp			Defin		36
46*	Unkno	NPOC	92356484003	WETA_33682	NPOC50pp			Defin		37
47*	Unkno	NPOC	92357328001	WETA_33682	NPOC50pp			Defin		38
48*	Unkno	NPOC	2113286	WETA_33682	NPOC50pp			Defin		39
49*	Unkno	NPOC	2113287	WETA_33682	NPOC50pp			Defin		40
50*	Unkno	NPOC	92357328002	WETA_33682	NPOC50pp			Defin		41
51*	Unkno	NPOC	92357328003	WETA_33682	NPOC50pp			Defin		42

KDF 10/9/17

90-110% <MDL

90-110% <MDL 50-150%

90-110% <MDL

Instr.Information

System	Pace
Instrument Options	TOC/ASI/Sparge Kit/
Catalyst	Regular Sensitivity

Cal. Curve

Sample Name:	ww50cal
Sample ID:	ww50cal
Cal. Curve:	NPOC50ppm.2017_10_02_16_12_39.cal
Status	Completed

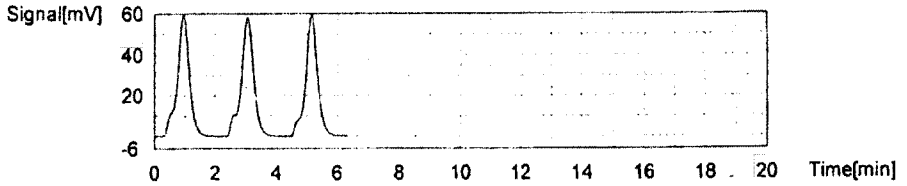
Type Anal.

Standard NPOC

Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.4	50uL	1	*******		10/2/2017 4:25:37 PM
2	165.6	50uL	1	*******		10/2/2017 4:27:52 PM
3	163.1	50uL	1	*******		10/2/2017 4:30:08 PM

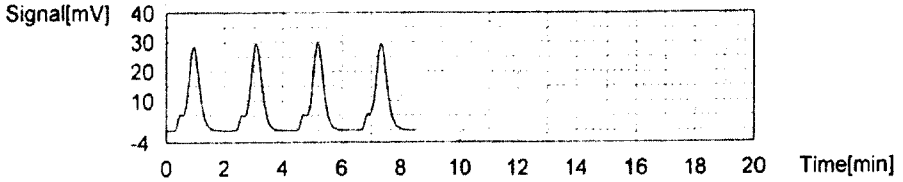
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 164.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	81.09	50uL	2	*******	E	10/2/2017 4:46:08 PM
2	83.50	50uL	2	*******		10/2/2017 4:48:23 PM
3	84.67	50uL	2	*******		10/2/2017 4:50:43 PM
4	84.85	50uL	2	*******		10/2/2017 4:52:58 PM

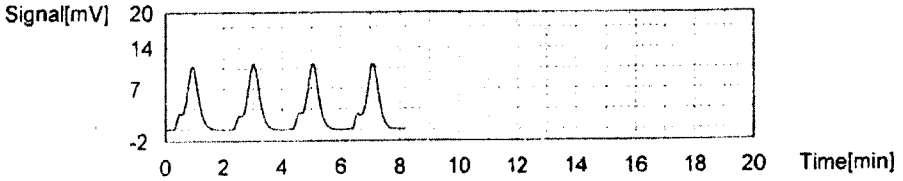
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 84.34



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	32.89	50uL	5	*******	E	10/2/2017 5:08:52 PM
2	33.99	50uL	5	*******		10/2/2017 5:11:03 PM
3	34.53	50uL	5	*******		10/2/2017 5:13:13 PM
4	33.78	50uL	5	*******		10/2/2017 5:15:25 PM

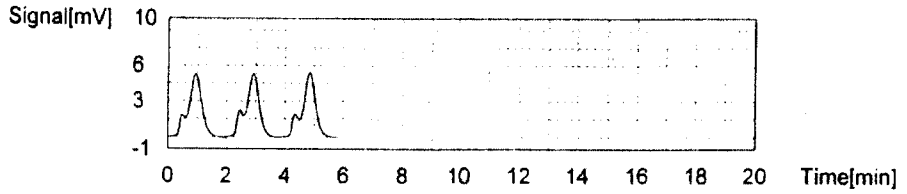
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 34.10



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	17.04	50uL	10	*******		10/2/2017 5:31:13 PM
2	17.20	50uL	10	*******		10/2/2017 5:33:16 PM
3	17.24	50uL	10	*******		10/2/2017 5:35:24 PM

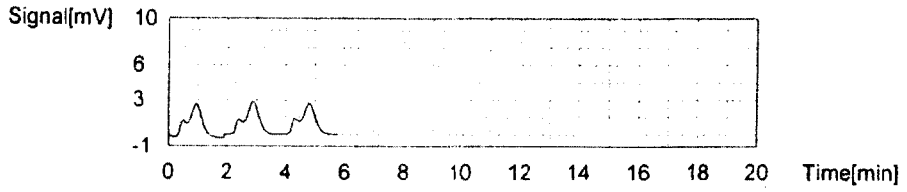
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 17.16



Conc: 2.500mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	9.727	50uL	20	*******		10/2/2017 5:50:52 PM
2	9.706	50uL	20	*******		10/2/2017 5:52:55 PM
3	9.705	50uL	20	*******		10/2/2017 5:55:03 PM

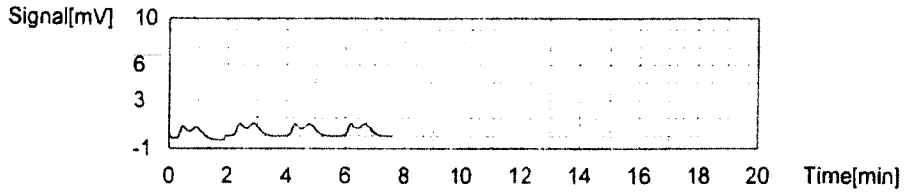
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 9.713



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.261	50uL	50	*******	E	10/2/2017 6:10:31 PM
2	4.595	50uL	50	*******		10/2/2017 6:12:34 PM
3	4.516	50uL	50	*******		10/2/2017 6:14:37 PM
4	4.431	50uL	50	*******		10/2/2017 6:16:40 PM

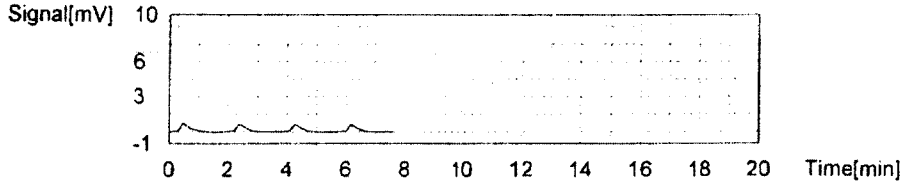
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 4.514



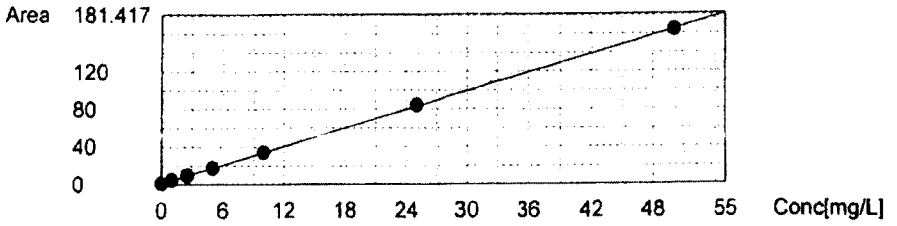
Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.525	50uL	1	*******	E	10/2/2017 6:30:21 PM
2	1.223	50uL	1	*******		10/2/2017 6:32:24 PM
3	1.161	50uL	1	*******		10/2/2017 6:34:27 PM
4	1.106	50uL	1	*******		10/2/2017 6:36:30 PM

Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 1.163



Slope:	3.271
Intercept	1.354
r^2	0.9999
r	1.0000
Zero Shift	No



TOC Curve ReadBack

Calibration Date		10/2/2017	
Slope	3.271		
Intercept	1.354		
Conc	Area	Calc Conc	% Rec
50.0	164.4	49.85	99.7%
25.0	84.34	25.37	101.5%
10.0	34.1	10.01	100.1%
5.0	17.16	4.83	96.6%
2.5	9.713	2.56	102.2%
1.0	4.514	0.97	96.6%
0.0	1.163	-0.06	NA

Pace Analytical

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Test: Total Organic Carbon
Method: SM 5310 B -2000, Rev.2011
Method:SW-846 9060A

Analyst:	KOF
Date Analyzed:	10/9/17
Reporting Limit:	1.0 mg/L
Matrix:	Water
Batch#:	WETA33690

Instrument: 92WETA6

Sample Number	Sample I.D.	Dilution Factor is always 1 unless otherwise noted.	VIAL Used is always 1 unless otherwise noted.
ICV Second Source Standard			
CCV Calibration Source Standard			
ICB			
Inorg. Carbon Check			
2113870	BLANK for HBN 381457 [WETA/336		
2113871	LCS for HBN 381457 [WETA/33690		
92357050001	MW-4S		
2113872	MW-4S(2105297MS)		
2113873	MW-4S(2105297MSD)		
92357050002	MW-5S		
92357050003	MW-6S		
92357284001	TW-11		
	CCV		
	CCB		

Carolina Benchsheet Version 7.1

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Pace Analytical™

Test: TOC

Method Number: "SM 5310 B - 2000.rev,2011"

Method Number: SW-846 9060A

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	
	WETA33690
Reporting Limit:	1.0 mg/L
Preservative:	Cool to above 0.0 - 6.0 degrees C,
	HCl
Holding Time:	28 Days
Instrument:	Shimadzu
Serial Number:	H51404535060 CS
Model Number:	TOC-VCPN
Epic Pro Inst ID:	92WTA6

Blank, ICB, CCB and Method Blank

2 N HCl		Final Vol. mL
Used, mL		DI Water
0.5		50

Calibration Standard

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
50.0	0.5	2.5	1,000	50

Note: Calibrate Daily!

ICV (Prepare From Second Source Standard)

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
25.0	0.5	1.25	1,000	50

CCV / LCS (Calibration Source)

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
25.0	0.5	1.25	1,000	50

How to prepare a Matrix Spike sample (Calibration Source)

Final Conc.		Volume	From Conc.	Final Vol. mL
mg/L		Used, mL	mg/L	Use Sample
25.0		0.625	1,000	25.0

1.0 Std (Calibration Source)

Final Conc.	2 N HCl	Volume	From	Final Volume
mg/L	Used, mL	Used, mL	mg/L	DI Water mL
1	0.5	0.05	1000	50.0
Final Conc.	2 N HCl	Volume	From Na_2CO_3	Final Volume

Inorganic Carbon Sparge Check 25 ppmC

Final Conc.	2 N HCl	Volume	From Na_2CO_3	Final Volume
mg/L	Used, mL	Used, mL	N	DI Water mL
25	0.5	1.7	0.1	40.0

LOQ - Quarterly Check

Final Conc.	2 N HCl	Volume	From	Final Volume
mg/L	Used, mL	Used, mL	mg/L	DI Water mL
2.5	0.5	0.125	1000	50.0

Analysis Reagents

SS#	
156695	**Calibration Standard, 1,000 mg/L Carbon:** Commercially purchased.
160223	**Second Source Standard, 1000 mg/L Carbon:** Commercially purchased.
15039	**Inorganic Carbon Check Std - 0.02N Na_2CO_3**

Carolina Benchsheet Version 7.1

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380022
Analysis Method: SM 2320B
QC Batch: Method: SM 2320B
Associated Lab Samples: 92357050001, 92357050002, 92357050003

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
	Alkalinity, Total as CaCO3	ND	mg/L	5.0	09/30/17 02:26	

Type	Sample	Matrix
BLANK	2106132	Water

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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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 380022
QC Batch: Method: SM 2320B

90-110%

Analysis Method: SM 2320B

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	09/30/17 02:35			**LCSD Prepared:**			**LCSD Analyzed:**		
Alkalinity, Total as CaCO3	mg/L	98			80-120		50	49.1		

Type	Sample	Matrix
LCS	2106133	Water

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9800 Kincey Ave Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

80-120 ≤30

QC Batch: 380022
QC Batch: Method SM 2320B

Analysis Method: SM 2320B

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	09/30/17 02:57		**MSD Prepared:**				**MSD Analyzed:**	09/30/17 03:09					
Alkalinity, Total as CaCO3	mg/L	106	108	1	80-120	25	50	50	1	1	16.1	68.9	69.9	

Type	Sample	Matrix	Client Sample ID
MS	2106134	Water	
MSD	2106135	Water	
Sample	92357050001	Water	MW-4S

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Alkalinity

10/2/17 KOF

MDL = 1.0 mg/L WET 55576

tiamo 2.5 Build 116
License ID: 14676229

Computer name: 93autotitrator

User (short name): inst
Printed: 2017-10-02 07:31:57 UTC-4

Determination overview

	ID1.Value	Sample size...	Initial pH (s.u)	RS03.Name	RS03.Value	Unit	Temperature (deg C)	
1	CCB	100	5.02	Total Alkalinity	-0.020 ✓	mg/L CaCO3	20.73	<MDL
2	CCV	50	8.43	Total Alkalinity	49.410 98.8% ✓	mg/L CaCO3	20.93	90-110%
3	92357050003	100	5.29	Total Alkalinity	3.147	mg/L CaCO3	20.81	
4	92357050002	100	5.96	Total Alkalinity	23.386	mg/L CaCO3	20.88	
5	2106135	50	7.04	Total Alkalinity	69.913	mg/L CaCO3	21.03	
6	2106134	50	7.07	Total Alkalinity	68.898	mg/L CaCO3	20.96	
7	92357050001	100	5.83	Total Alkalinity	16.057	mg/L CaCO3	20.84	
8	2106133 LD	50	8.82	Total Alkalinity	49.146 98%	mg/L CaCO3	20.96	
9	2106132 MS	100	5.01	Total Alkalinity	-0.041 ✓	mg/L CaCO3	20.83	<MDL
10	CCB	100	4.93	Total Alkalinity	-0.223 ✓	mg/L CaCO3	21.53	<MDL
11	CCV	50	10.01	Total Alkalinity	49.512 99% ✓	mg/L CaCO3	21.54	90-110%
12	LOQ	50	6.84	Total Alkalinity	9.419 94% ✓	mg/L CaCO3	21.63	
13	ICV	50	10.10	Total Alkalinity	52.232 104% ✓	mg/L CaCO3	21.53	90-110%
14	ICB	100	4.90	Total Alkalinity	-0.254 ✓	mg/L CaCO3	21.59	<MDL
15	0.1000	1.25	0.1011	Sulfric Acid Normality	0.1025 102.5%	mol/L		
16	0.1000	1.25	0.0998	Sulfric Acid Normality	0.0998 99.8%	mol/L		

Determination overview

	Determination start	P Alk	Hydroxide	Carbonate	Bicarbonate
1	2017-09-30 03:54:56 UTC-4	0.000	0.020	-0.041	0.000
2	2017-09-30 03:43:04 UTC-4	0.000	0.000	0.000	49.410
3	2017-09-30 03:33:13 UTC-4	0.000	0.000	0.000	3.147
4	2017-09-30 03:22:02 UTC-4	0.000	0.000	0.000	23.386
5	2017-09-30 03:09:36 UTC-4	0.000	0.000	0.000	69.913
6	2017-09-30 02:57:07 UTC-4	0.000	0.000	0.000	68.898
7	2017-09-30 02:46:07 UTC-4	0.000	0.000	0.000	16.057
8	2017-09-30 02:35:38 UTC-4	0.386	0.000	0.771	48.375
9	2017-09-30 02:26:31 UTC-4	0.000	0.041	-0.081	0.000
10	2017-09-29 09:16:12 UTC-4	0.000	0.223	-0.447	0.000
11	2017-09-29 09:04:58 UTC-4	12.870	0.000	25.740	23.771
12	2017-09-29 08:55:58 UTC-4	0.000	0.000	0.000	9.419
13	2017-09-29 08:45:05 UTC-4	15.793	0.000	31.587	20.645
14	2017-09-29 08:36:02 UTC-4	0.000	0.254	-0.507	0.000
15	2017-09-29 08:32:45 UTC-4				
16	2017-09-29 08:29:15 UTC-4				

Determination overview

	ID1.Value	Sample size...	Initial pH (s.u)	RS03.Name	RS03.Value	Unit	Temperature (deg C)
1	0.1000	1.25	0.0203	Sulfric Acid Normality	0.0204 102%	mol/L	
2	0.1000	1.25	0.0202	Sulfric Acid Normality	0.0202 101%	mol/L	
3	pH 7 Second Source Buffer	50.0	7.01	pH 2nd Meas	7.01		21.72
4	pH 12 Buffer	50.0	12.09	pH 2nd Meas	12.09		21.66
5	pH 2 Buffer	50.0	1.99	pH 2nd Meas	1.99		21.74
6		50		slope	99.10 ✓	%	

Determination overview

	Determination start	P Alk	Hydroxide	Carbonate	Bicarbonate
1	2017-09-29 08:24:22 UTC-4				
2	2017-09-29 08:17:54 UTC-4				
3	2017-09-29 08:11:39 UTC-4				
4	2017-09-29 08:05:48 UTC-4				
5	2017-09-29 08:00:05 UTC-4				
6	2017-09-29 07:50:36 UTC-4				

Calibration report

Determination

Method . . . . . pH Electrode Calibration
Method saving date 2017-02-07 10:50:03 UTC-5
Method version 12
Method state . . . . . original
Determination ID . . . . . -2c809082:15e94c1c360:-4598
Determination start 2017-09-29 07:50:36 UTC-4
Determination state . . . . . original
Determination version 1
Run number 1046
User (full name) . . . . . .
User (short name) . . . . . inst

Sample data

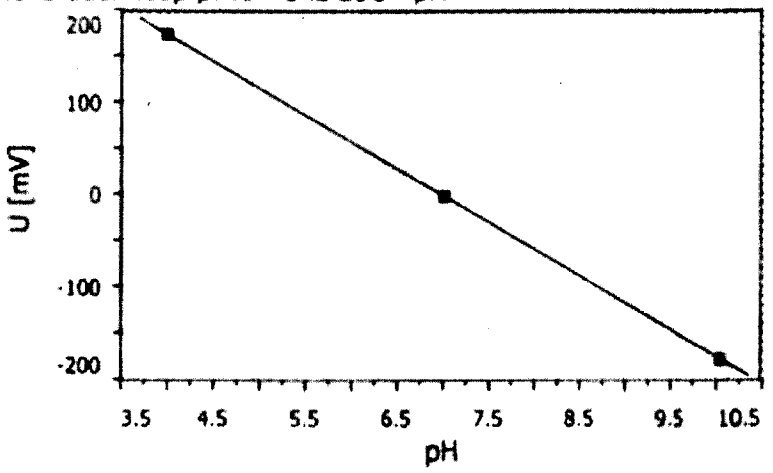
Sample Identification 1 . . . . . .
Sample size 50

CAL LOOP pH **calibration loop pH.1**

Sensor name . . . . . pH electrode
Sensor type . . . . . pH electrode
pH(0) 6.974
Slope . . . . . 99.1 % ✓
Variance 0.015
Calibration temperature . . . . . (Pt1000) . . . . . 21.7 °C
Calibration date 2017-09-29 07:59:58 UTC-4
Calibration method . . . . . pH Electrode Calibration

	pH	U [mV]	T [°C]	t [s]
Buffer 1	4.000	172.5	21.7	120
Buffer 2	7.013	-2.4	21.7	120
Buffer 3	10.040	-177.7	21.7	120

calibration loop pH.1 - CAL LOOP pH



Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Test: Alkalinity

Method Number: SM 2320 B -1997, Rev.2011

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	WET55576
Reporting Limit:	DW 1.0 mg/L / WW 5.0
Preservative:	Cool to above 0.0-6.0 degrees C
Holding Time:	14 Days
Instrument:	Autotitrator
Serial Number:	188800102248
Model Number:	888 Titrando
Epic Pro ID:	92WETD

Titrant = 0.02N Sulfuric Acid

Normality Check = 0.1N Sodium Carbonate

ICV / CCV					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
50		2.5	1000*	50	WW
50		5.0	1000*	100	DW

* Note: 0.02N = 1000 mg/L Alkalinity, 0.1N = 5000 mg/L Alkalinity

LCS					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
50		2.5	1000*	50	WW
50		5.0	1000*	100	DW
MS					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL Sample	
50		0.5	5000*	50	WW
50		1.0	5000*	100	DW
LOQ					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
10		0.5	1,000	50	WW
2		0.2	1,000	100	DW

Analysis Reagents: SS#s

16103	0.1N Sodium Carbonate	16269	pH 4 buffer	16144	pH 7 buffer 2nd Source
16100	0.02N Sodium Carbonate	16175	pH 7 buffer	16292	pH 2buffer
16035	0.02N Sodium Carbonate, 2nd Source				
16291	0.02N Sulfuric Acid	16284	pH 10 buffer	16235	pH 12 buffer
15620	0.1N Sulfuric Acid	15382	Electrode ID Number		

Carolina Benchsheet Version 7.1

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 379995
QC Batch Method: EPA 9056A
Analysis Method: EPA 9056A
Associated Lab Samples: 92357050001, 92357050002, 92357050003

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
16887-00-6	Chloride	ND	mg/L	1.0	09/28/17 23:14	
14797-55-8	Nitrate as N	ND	mg/L	0.10	09/28/17 23:14	
14808-79-8	Sulfate	ND	mg/L	1.0	09/28/17 23:14	

Type	Sample	Matrix
BLANK	2106043	Water

all ND

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 379995
QC Batch Method: EPA 9056A

Analysis Method: EPA 9056A

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	09/28/17 23:30			**LCSD Prepared:**			**LCSD Analyzed:**		
Chloride	mg/L	107			90-110		50	53.7		
Nitrate as N	mg/L	108			90-110		2.5	2.7		
Sulfate	mg/L	106			90-110		50	53.0		

Type	Sample	Matrix
LCS	2106044	Water

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Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

QC Batch: 379995
QC Batch Method: EPA 9056A

Analysis Method: EPA 9056A

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:		**MS Analyzed:**	09/29/17 01:22		**MSD Prepared:**			**MSD Analyzed:**	09/29/17 01:38					
Chloride	mg/L	102	102	0	90-110	10	50	50	1	1	11.0	61.9	62.0	
Nitrate as N	mg/L	102	102	0	90-110	10	2.5	2.5	1	1	ND	2.6	2.5	
Sulfate	mg/L	93	93	0	90-110	10	50	50	1	1	34.2	80.5	80.8	

Type	Sample	Matrix	Client Sample ID
MS	2106045	Water	
MSD	2106046	Water	
Sample	92357050001	Water	MW-4S

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Cl, NO_3, SO_4 WETA 33563

MW 9-29-17

Sample Name	RS.Anions.Fl F	RS.Anions.C Cl	RS.Anio NO2	RS.Anions. Br	RS.Anions. NO3	RS.Anions.I PO4	RS.Anions SO4	Method	Analysis Start Date/Ti	RS.(04) Anion Dilution
LEVEL 1								MiVDT 4	2017-08-02 11:22:10	1
LEVEL 2	0.085	0.848	0.069	0.081	0.075	0.078	0.906	MiVDT 4	2017-08-02 11:42:57	1
LEVEL 3	1.285	25.136	1.217	1.126	1.167	1.197	26.402	MiVDT 4	2017-08-02 11:58:54	1
LEVEL 4	2.529	50.028	2.571	2.406	2.456	2.452	50.86	MiVDT 4	2017-08-02 12:14:51	1
LEVEL 5	3.789	75.656	3.672	3.825	3.818	3.807	75.306	MiVDT 4	2017-08-02 12:30:49	1
LEVEL 6	4.917	99.37	5.092	5.192	5.1	5.077	97.682	MiVDT 4	2017-08-02 12:46:47	1
ICB								MiVDT 4	2017-08-02 13:18:43	1
ICV	2.674	52.735	2.752	2.533	2.643	2.705	52.654	MiVDT 4	2017-08-02 13:50:46	1
PRL	0.082	0.89	0.078	0.084	0.078	0.089	0.956	MiVDT 4	2017-09-28 22:18:39	1
CCB						0.035		MiVDT 4	2017-09-28 22:42:11	1
CCV	2.746	53.362	2.661	2.61	2.677	2.616	52.643	MiVDT 4	2017-09-28 22:58:10	1
2106043 BLK						0.056		MiVDT 4	2017-09-28 23:14:10	1
2106044 LCS	2.787	53.67	2.704	2.63	2.695	2.658	52.955	MiVDT 4	2017-09-28 23:30:16	1
* 92357050001	0.023						55.728	MiVDT 4	2017-09-28 23:46:14	1
* 2106045						5.779	33.985	MiVDT 4	2017-09-29 00:02:13	1
* 2106046	2.658	63.386	1.726	2.604	2.643	2.492	82.409	MiVDT 4	2017-09-29 00:18:14	1
92357050002	0.074	7.14		0.172	0.133	0.112	0.37	MiVDT 4	2017-09-29 00:34:13	1
92357050003	0.025	1.054			0.118	0.06	5.984	MiVDT 4	2017-09-29 00:50:12	1
92357050001	0.022	11.019		0.027		0.062	34.189	MiVDT 4	2017-09-29 01:06:11	1
2106045	2.618	61.887	1.658	2.526	2.551	2.322	80.521	MiVDT 4	2017-09-29 01:22:14	1
2106046	2.557	61.984	1.667	2.521	2.546	2.366	80.841	MiVDT 4	2017-09-29 01:38:15	1
CCB	0.005					0.088		MiVDT 4	2017-09-29 01:54:14	1
CCV	2.775	53.528	2.737	2.606	2.673	2.657	52.967	MiVDT 4	2017-09-29 02:10:13	1
CCV Repeated	2.697	53.5	2.753	2.602	2.669	2.627	52.967	MiVDT 4	2017-09-29 02:26:14	1

* pressure lost. Samples rerun. MW 09-29-17

Soil/Manual Dilution Worksheet

Analyst:	MW
Date:	09.28.17
Batch #	weta33563
SS # Boiling Chips	NA
Tube / Serum Filter SS No.:	
Other Filter SS No.:	

✓ Check here if no manual dilutions performed for entire batch

* If any samples are filtered, MB and LCS must also be filtered

Sample ID	Initial Vol. ml/g	The Final Vol is 5mL for TCN or 50mL for all other test unless otherwise noted	Samples not filtered unless a "Y" is noted*
2106043			
2106044			
92357050001			
2106045			
2106046			
92357050002			
92357050003			

Pace Analytical™

Test: Ion Chromatography

Method Number: EPA 300.0, Rev.2.1 (1993)
Method Number: SW 846 -9056A

All Units in mg/L

Analytes	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Fluoride	0.00	0.10	1.25	2.50	3.75	5.00
Sulfate	0.00	1.00	25.00	50.00	75.00	100.00
Nitrite as N	0.00	0.10	1.25	2.50	3.75	5.00
Nitrate as N	0.00	0.10	1.25	2.50	3.75	5.00
Chloride	0.00	1.00	25.00	50.00	75.00	100.00
Bromide	0.00	0.10	1.25	2.50	3.75	5.00
Orthophosphate as P	0.00	0.10	1.25	2.50	3.75	5.00

Analysis Reagents

SS#

14445 **Standard Mix 1 - Calibration Source**

15740 **Standard Mix 2 - Calibration Source**

16064 **Standard Mix 3 - Second Source ICV**

NA **Suppressor Rinse Solution**

25807 **Suppressor Regenerant Solutions**

14604 **Guard Column**

14931 **Analytical Column**

25848 **Working Eluent**

NA **Filters**

Comments: Check box if there is an issue and then write what happened in the "Issues" section, end of report.

Sample Collection, Preservation, & Handling:

☐ **Hold Time:** 28 days from time of collection.

Pace Analytical™

Test: Ion Chromatography

Method Number: EPA 300.0, Rev.2.1 (1993)

Method Number: SW 846 -9056A

Batch(s):	weta33563
Reporting Limit:	**Fluoride 0.1 mg/L**
	Sulfate 1.0 mg/L
Preservative:	**Cool to above 0.0 -6.0 degrees C**

See first page - Excel Result spreadsheet for Inst used

Instrument:	**IC Metrohm 930**
Serial Number:	**1930100004114**
Epic Pro ID:	**92WTAC**
Instrument:	**IC Metrohm 930**
Serial Number:	**1930000109120**
Epic Pro ID:	**93WTA1**
Instrument:	**IC Metrohm 881**
Serial Number:	**1881000116126**
Epic Pro ID:	**93WTA2**
Instrument:	
Serial Number:	
Epic Pro ID:	
Instrument:	
Serial Number:	
Epic Pro ID:	

Calibration Standards

Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water
Level 1		0.00	DI Water	50.0

Level 2 Calibration Standard/PRL

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 1	0.1*/1.0**	0.50	10*/100**	50

Level 3 Calibration Standard

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 2	1.25*/25**	0.125	500*/10000**	50

Level 4 Calibration Standard/CCV

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 2	2.5*/50**	0.25	500*/10000**	50

Level 5 Calibration Standard/CCV

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 2	3.75*/75**	0.375	500*/10000**	50

Level 6 Calibration Standard

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 2	5.0*/100**	0.50	500*/10000**	50

Level 7 Calibration Standard

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water/Sample
Standard Mix 2	7.5*/150**	0.75	500*/10000**	50

Second Source ICV/LCS

	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 3	2.5*/50**	0.50	250*/5000**	50

Matrix Spike

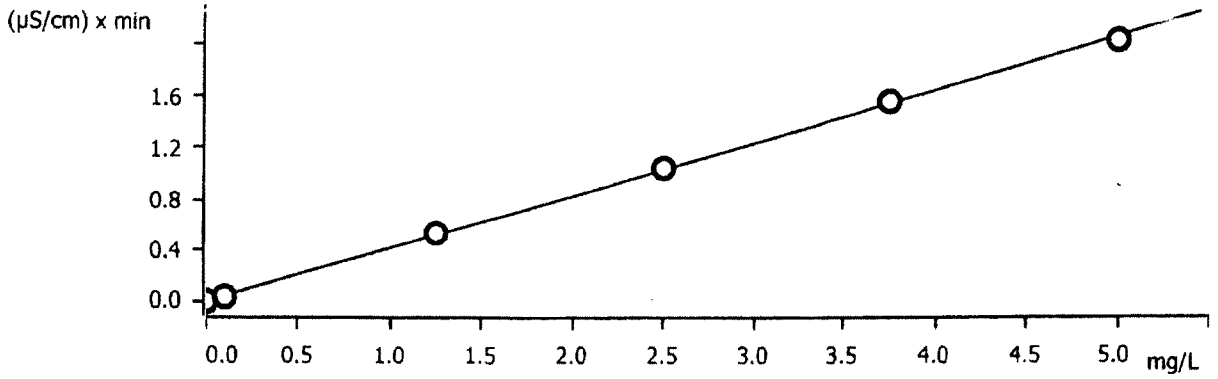
	Final Conc. (mg/L)	Volume used, mL	From Conc. (mg/L)	Final Vol. mL Sample
Standard Mix 2	2.5*/50**	0.05	500*/10000**	10

*F, NO2, Br, NO3, PO4

**Cl, SO4

area counts not provided for samples; only concentrations provided

Fluoride (Anions)



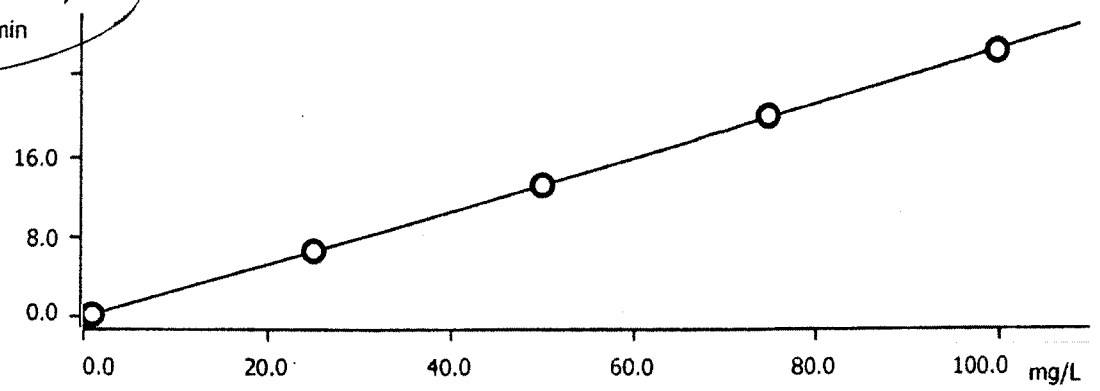
Function: . . . . . *A = - 1.42213E-7 + 0.0206878× Q*

Relative standard deviation . . . . . *2.452569 %*

Correlation coefficient *0.999736*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0352	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.5317	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.0466	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	1.5675	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	2.0346	LEVEL 6	2017-08-02 12:46:47 UTC-4

Chloride (Anions)



Function: . . . . . *A = - 1.71229E-7 + 0.0132270× Q*

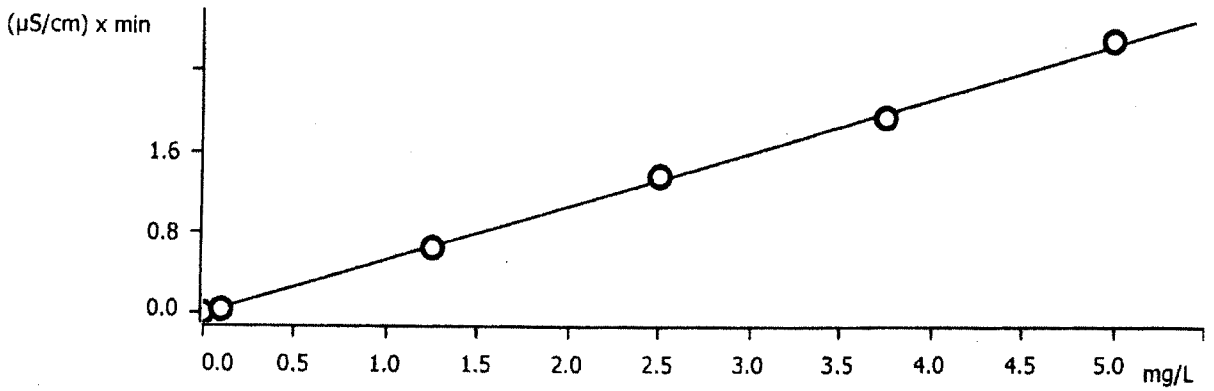
Relative standard deviation . . . . . *1.114459 %*

20.995

Correlation coefficient 0.999947

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	1.000	20.0	1.0	1.0	0.2243	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	25.000	20.0	1.0	1.0	6.6495	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	50.000	20.0	1.0	1.0	13.2343	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	75.000	20.0	1.0	1.0	20.0141	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	100.000	20.0	1.0	1.0	26.2874	LEVEL 6	2017-08-02 12:46:47 UTC-4

Nitrite (Anions)



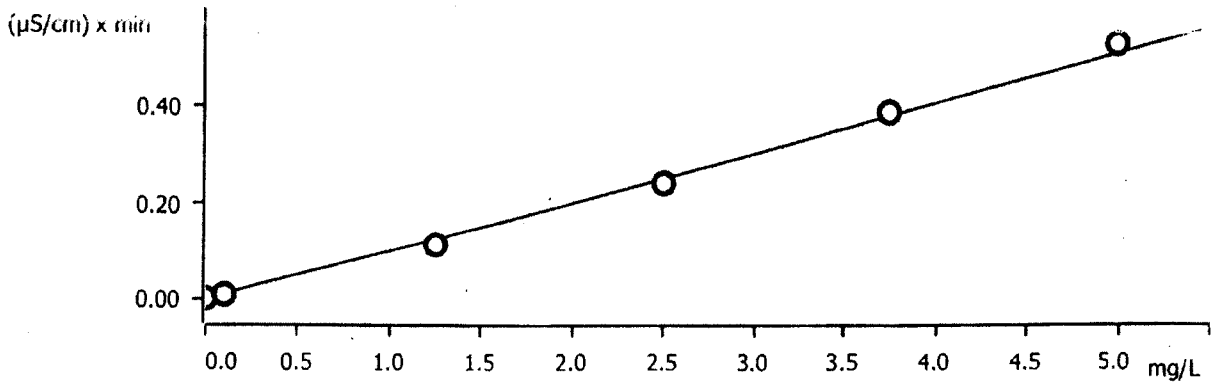
Function: . . . . . *A = - 4.60505E-7 + 0.0266062× Q*

Relative standard deviation . . . . . *3.502797 %*

Correlation coefficient *0.999482*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0365	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.6476	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.3682	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	1.9539	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	2.7096	LEVEL 6	2017-08-02 12:46:47 UTC-4

Bromide (Anions)



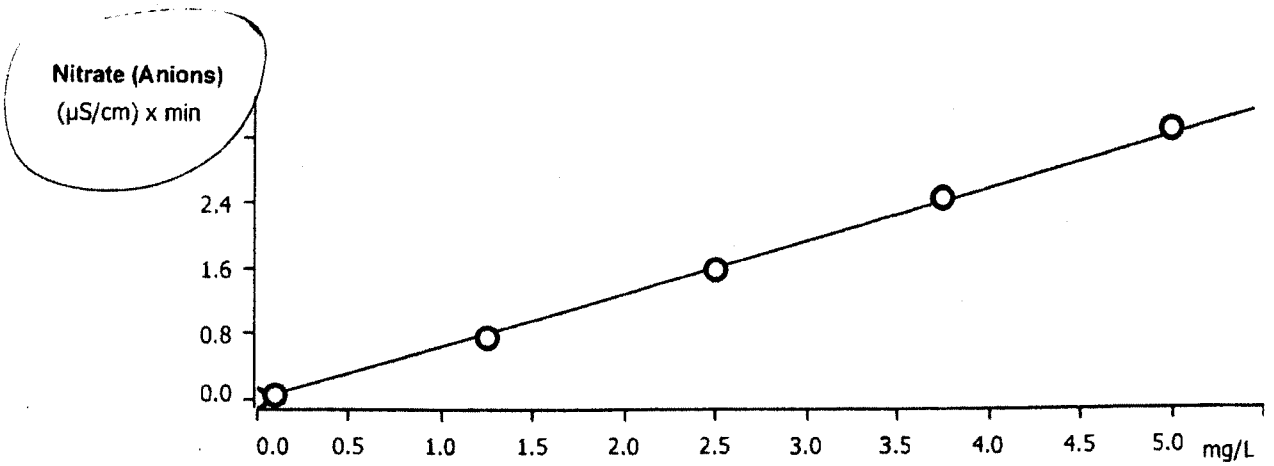
Function: . . . . . *A = - 3.21689E-7 + 5.07116E-3× Q*

Relative standard deviation . . . . . *6.154752 %*

Correlation coefficient *0.998477*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0083	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.1142	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	0.2440	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	0.3880	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	0.5266	LEVEL 6	2017-08-02 12:46:47 UTC-4

Nitrate (Anions)



Function: . . . . . *A = - 3.75636E-7 + 0.0322957× Q*

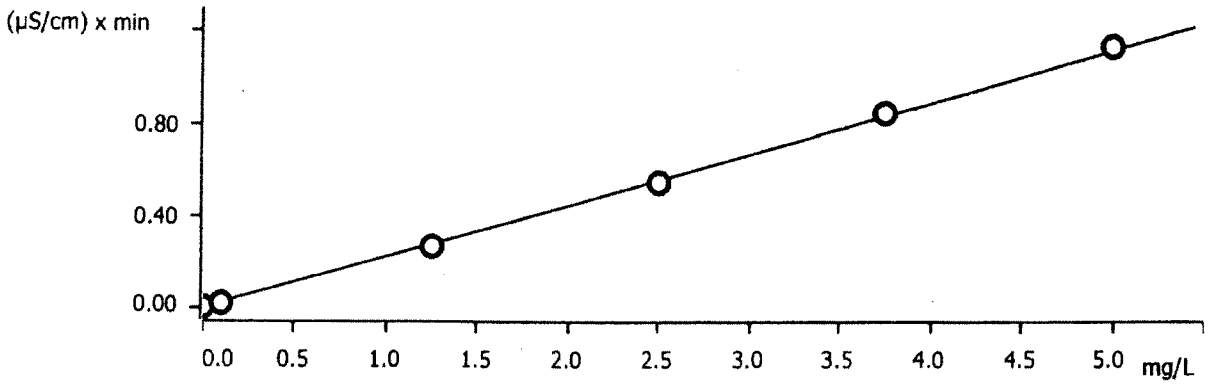
Relative standard deviation . . . . . *3.681185 %*

Correlation coefficient *0.999441*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 2	1	0.100	20.0	1.0	1.0	0.0488	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.7541	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.5867	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	2.4664	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	3.2941	LEVEL 6	2017-08-02 12:46:47 UTC-4

Phosphate (Anions)

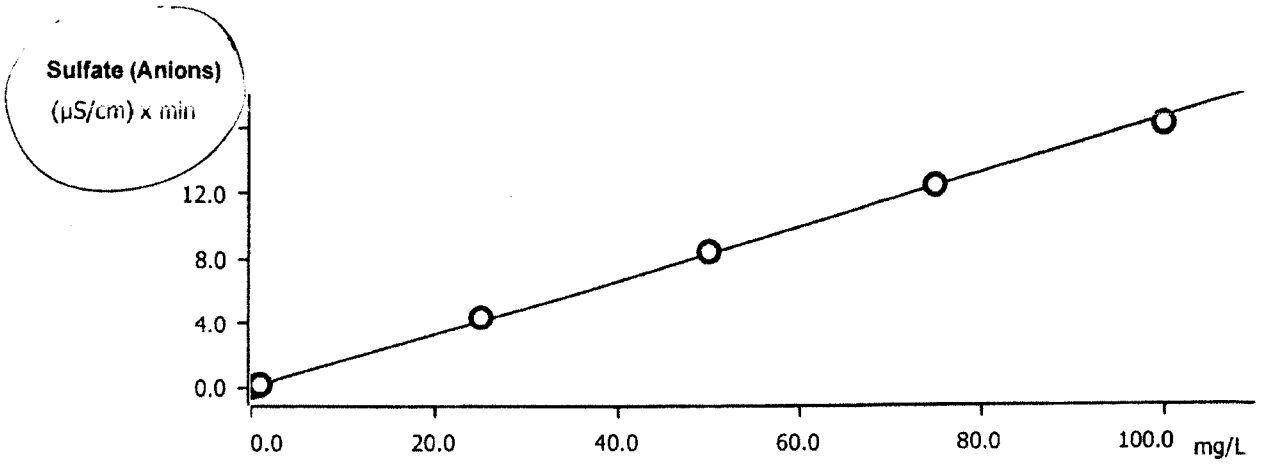


Function: . . . . . *A = - 3.18462E-7 + 0.0111628× Q*

Relative standard deviation . . . . . *2.889590 %*

Correlation coefficient *0.999652*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0174	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.2673	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	0.5474	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	0.8500	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	1.1335	LEVEL 6	2017-08-02 12:46:47 UTC-4



Function: . . . . . *A = - 5.37096E-8 + 8.28579E-3× Q*

Relative standard deviation . . . . . *3.416502 %*

Correlation coefficient *0.999488*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	1.000	20.0	1.0	1.0	0.1501	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	25.000	20.0	1.0	1.0	4.3752	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	50.000	20.0	1.0	1.0	8.4283	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	75.000	20.0	1.0	1.0	12.4794	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	100.000	20.0	1.0	1.0	16.1874	LEVEL 6	2017-08-02 12:46:47 UTC-4

B. SDG 92357284

ENVIRONMENTAL STANDARDS

INORGANIC ANALYSIS SUPPORT DOCUMENTATION

ESI project name: Kinder Morgan - 2017 Fountain Inn DV

Sample Collection Dates: 9/28/17

Job Number: 20177961.A000

Project Manager: ALM

Laboratory: Pace Carolinas

Reviewed by: CMR

Approved by: [illegible]

Completion Date: 11/2017

Applicable Sample No's ( ) Refer to Table 1 in the Quality Assurance Review

Deliverable:			Sample No.	Lab Control No.
	CLP (Full)	( )	92357284	
	Level IV (Full)	(X)		
	Limited	( )		
	Other:			

The following table indicates criteria that were examined, the identified problems, and support documentation attachments

	Criteria Examined in Detail Check (√) if Yes or Footnote Letter for Comments Below					Problems Identified Check (√) if Yes or Footnote Letter for Comments Below					Support Documentation Attachments Check (√) if Yes or Footnote Letter for Comments Below				
	6010	5310	2320	9056		6010	5310	2320	9056		6010	5310	2320	9056	
Holding Times	√	√	√	√							√	√	√	√	
Blank Analysis Results	√	√	√	√							√	√	√	√	
Matrix Spike (Predigestion) Results	√	√	√	√							√	√	√	√	
Duplicate Analysis: ( ) Field ( ) Lab															
Quantitation of Results	√	√	√	√							√	√	√	√	
Detection Limit/Sensitivity	√	√	√	√							√	√	√	√	
Initial Calibrations	√	√	√	√							√	√	√	√	
Continuing Calibrations	√	√	√	√							√	√	√	√	
Laboratory Control Standard (LCS)	√	√	√	√							√	√	√	√	
ICP Linear Range Analysis	√										√				
ICP Interference Checks	√										√				
ICP Serial Dilutions	√										√				
ICP Post-Digestion Spike															
GFAA Post Digestion Spikes															
GFAA Duplicate Injections															
ICP Multiple Exposures															
GFAA Standard Additions															
CRDL Standards	√	√	√	√							√	√	√	√	
Condition on Receipt	√	√	√	√							√	√	√	√	
Percent Solids															
Others:															

Comments:

BLANK ANALYSIS RESULTS FOR INORGANIC PARAMETERS

Analysis Type	Matrix (Aq, S)	Blank Type (2)	Blank Sample Number	Contaminant	Concentration (mg/L, mg/kg)	Qualif Limit
			SDG: 92357284			5X
			All blanks	none		

2: MB = Method Blank; TB = Trip Blank; EB = Equipment Blank; FB = Field Blank; IB = Instrument Blank; SB = Storage Blank

Notes: No blank qualification necessary

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381042
QC Batch: Method: EPA 3010A

Analysis Method: EPA 6010

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared: 10/05/17 21:35	**LCS Analyzed:** 10/06/17 22:40				**LCSD Prepared:**			**LCSD Analyzed:**		
Iron	ug/L	100			80-120		5000	4980		
Manganese	ug/L	102			80-120		500	510		

Type	Sample	Matrix
LCS	2111533	Water

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, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381042
QC Batch: Method EPA 3010A

Analysis Method: EPA 6010

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared: 10/05/17 21:35	**MS Analyzed:** 10/06/17 22:46				**MSD Prepared:** 10/05/17 21:35		**MSD Analyzed:** 10/06/17 22:58							
Iron	ug/L	96	87	2	75-125	20	5000	5000	1	1	19600	24400	23900	
Manganese	ug/L	95	94	0	75-125	20	500	500	1	1	848	1320	1320	

Type	Sample	Matrix	Client Sample ID
MS	2111534	Water	
MSD	2111535	Water	
Sample	92357297001	Water	N/A

N/A Batch QC
non-project

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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Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381042
QC Batch: Method: EPA 3010A
Associated Lab Samples: 92357284001

Analysis Method: EPA 6010

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
7439-89-6	Iron	ND	ug/L	50.0	10/06/17 22:36	
7439-96-5	Manganese	ND	ug/L	5.0	10/06/17 22:36	

Type	Sample	Matrix
BLANK	2111532	Water

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™

ICV/ICB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	ICV 10/6/2017 12:53 True Conc	Found	% Recov
Fe_259.9	5000	5093	101.9%
Mn_257.6	500	512	102.4%

LL CCV 10/6/2017 14:21 True Conc	Found	% Recov
50	54.83	109.7%
5	4.986	99.7%

ICB 10/6/2017 12:56 Reporting Limit	Found	Qualify
50	3.67	
5	0.0244	

< MDL

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 14:15 True Conc	Found	% Recov
Fe_259.9	5000	4935	98.7%
Mn_257.6	500	490.4	98.1%

LL CCV 10/6/2017 14:21 True Conc	Found	% Recov
50	50.61	101.2%
5	4.942	98.8%

CCB 10/6/2017 14:18 Reporting Limit	Found	Qualify
50	0.7241	
5	-0.0005	

non bracketing

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 14:55 True Conc	Found	% Recov
Fe_259.9	5000	5062	101.2%
Mn_257.6	500	504.7	100.9%

LL CCV 10/6/2017 15:02 True Conc	Found	% Recov
50	51.69	103.4%
5	5.054	101.1%

CCB 10/6/2017 14:58 Reporting Limit	Found	Qualify
50	-3.59	
5	-0.0345	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 15:36			LL CCV 10/6/2017 15:42			CCB 10/6/2017 15:39		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5128	102.6%	50	48.71	97.4%	50	-1.685	
Mn_257.6	500	508.1	101.6%	5	5.049	101.0%	5	-0.0126	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 16:25			LL CCV 10/6/2017 16:31			CCB 10/6/2017 16:28		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5039	100.8%	50	51.95	103.9%	50	-1.344	
Mn_257.6	500	498	99.6%	5	5.055	101.1%	5	0.0079	

Pace Analytical

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 17:25			LL CCV 10/6/2017 17:31			CCB 10/6/2017 17:28		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5043	100.9%	50	46.7	93.4%	50	-1.78	
Mn_257.6	500	521.4	104.3%	5	5.072	101.4%	5	-0.0007	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 18:05			LL CCV 10/6/2017 18:11			CCB 10/6/2017 18:08		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5040	100.8%	50	47.83	95.7%	50	-0.8942	
Mn_257.6	500	511.9	102.4%	5	5.082	101.6%	5	-0.071	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 19:12			LL CCV 10/6/2017 19:18			CCB 10/6/2017 19:15		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5061	101.2%	50	55.4	110.8%	50	-4.35	
Mn_257.6	500	509	101.8%	5	5.071	101.4%	5	0.0117	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 19:59			LL CCV 10/6/2017 20:05			CCB 10/6/2017 20:02		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5033	100.7%	50	51.88	103.8%	50	-6.526	
Mn_257.6	500	517.1	103.4%	5	5.144	102.9%	5	-0.0617	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 20:40			LL CCV 10/6/2017 20:46			CCB 10/6/2017 20:43		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5066	101.3%	50	48.23	96.5%	50	0.5377	
Mn_257.6	500	513.2	102.6%	5	5.264	105.3%	5	-0.0451	

Pace Analytical

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 21:21			LL CCV 10/6/2017 21:27			CCB 10/6/2017 21:24		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5036	100.7%	50	50.81	101.6%	50	-2.971	
Mn_257.6	500	514.2	102.8%	5	5.149	103.0%	5	-0.0204	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 22:08 True Conc	Found	% Recov	LL CCV 10/6/2017 22:14 True Conc	Found	% Recov	CCB 10/6/2017 22:11 Reporting Limit	Found	Qualify
Fe_259.9	5000	5026	100.5%	50	50.18	100.4%	50	-2.675	
Mn_257.6	500	515.8	103.2%	5	5.163	103.3%	5	-0.0278	

<MDL

bracketing

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 22:49 True Conc	Found	% Recov
Fe_259.9	5000	5013	100.3%
Mn_257.6	500	521.2	104.2%

	LL CCV 10/6/2017 22:55 True Conc	Found	% Recov
	50	52.81	105.6%
	5	5.194	103.9%

	CCB 10/6/2017 22:52 Reporting Limit	Found	Qualify
	50	-0.1783	
	5	0.0008	

< MDL

bracketing

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/6/2017 23:30			LL CCV 10/6/2017 23:36			CCB 10/6/2017 23:33		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5011	100.2%	50	49.79	99.6%	50	-7.163	
Mn_257.6	500	524	104.8%	5	5.172	103.4%	5	-0.0184	

<MDL

Bracketing

Pace Analytical

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 0:18			LL CCV 10/7/2017 0:24			CCB 10/7/2017 0:21		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5024	100.5%	50	52.66	105.3%	50	-4.104	
Mn_257.6	500	519.1	103.8%	5	5.232	104.6%	5	0.0152	

non-bracketing

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 0:58			LL CCV 10/7/2017 1:04			CCB 10/7/2017 1:01		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5074	101.5%	50	51.67	103.3%	50	-3.873	
Mn_257.6	500	521.7	104.3%	5	5.199	104.0%	5	0.0069	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 1:39			LL CCV 10/7/2017 1:45			CCB 10/7/2017 1:42		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5077	101.5%	50	49.96	99.9%	50	1.216	
Mn_257.6	500	521.8	104.4%	5	5.157	103.1%	5	0.0208	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 2:26			LL CCV 10/7/2017 2:32			CCB 10/7/2017 2:29		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	5003	100.1%	50	51.27	102.5%	50	0.6856	
Mn_257.6	500	515.1	103.0%	5	5.196	103.9%	5	-0.0976	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 3:06			LL CCV 10/7/2017 3:13			CCB 10/7/2017 3:09		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4974	99.5%	50	52.13	104.3%	50	-4.758	
Mn_257.6	500	512.6	102.5%	5	5.081	101.6%	5	-0.034	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 3:47			LL CCV 10/7/2017 3:54			CCB 10/7/2017 3:50		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4960	99.2%	50	49.7	99.4%	50	-1.439	
Mn_257.6	500	516.1	103.2%	5	5.173	103.5%	5	0.0022	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 4:34			LL CCV 10/7/2017 4:40			CCB 10/7/2017 4:37		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4879	97.6%	50	48.84	97.7%	50	-2.247	
Mn_257.6	500	520.7	104.1%	5	5.078	101.6%	5	-0.0362	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 5:15			LL CCV 10/7/2017 5:21			CCB 10/7/2017 5:18		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4919	98.4%	50	48.87	97.7%	50	-3.421	
Mn_257.6	500	513.8	102.8%	5	5.125	102.5%	5	0.0455	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 5:55			LL CCV 10/7/2017 6:01			CCB 10/7/2017 5:58		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4948	99.0%	50	51.36	102.7%	50	-4.393	
Mn_257.6	500	520.3	104.1%	5	5.175	103.5%	5	0.0034	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 6:42			LL CCV 10/7/2017 6:48			CCB 10/7/2017 6:44		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4926	98.5%	50	45.36	90.7%	50	-1.848	
Mn_257.6	500	522.5	104.5%	5	5.188	103.8%	5	-0.0088	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 7:22 True Conc	Found	% Recov
Fe_259.9	5000	4895	97.9%
Mn_257.6	500	515.5	103.1%

LL CCV 10/7/2017 7:28 True Conc	Found	% Recov
50	50.98	102.0%
5	5.093	101.9%

CCB 10/7/2017 7:25 Reporting Limit	Found	Qualify
50	-2.844	
5	-0.0167	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 7:47			LL CCV 10/7/2017 7:53			CCB 10/7/2017 7:50		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4916	98.3%	50	45.45	90.9%	50	-2.99	
Mn_257.6	500	517.6	103.5%	5	5.124	102.5%	5	-0.0009	

Pace Analytical™

CCV/CCB/LLCCV SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: CCV - Spex
ICV - Inorganic Ventures

Acceptable Range:
ICV/CCV: 90% - 110%
LLCCV: 50% - 150%
ICB/CCB: < 0.5 * RL

Element_WL/Mass	CCV 10/7/2017 8:57			LL CCV 10/7/2017 9:03			CCB 10/7/2017 9:00		
	True Conc	Found	% Recov	True Conc	Found	% Recov	Reporting Limit	Found	Qualify
Fe_259.9	5000	4955	99.1%	50	53.77	107.5%	50	-2.19	
Mn_257.6	500	522.1	104.4%	5	5.217	104.3%	5	-0.0008	

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 13:37 Found	% Recov
Al_396.1	100000	99370	99.4%
Sb_206.8	5	0.3608	
As_189.0	5	-0.7235	
Ba_455.4	5	0.0735	
Be_313.0	1	-0.2021	
B_249.6	50	11.97	
Cd_228.8	1	-1.03	
Ca_317.9	100000	97190	97.2%
Cr_267.7	5	-0.4878	
Co_228.6	5	-1.716	
Cu_324.7	5	-1.35	
Fe_259.9	100000	96340	96.3%
Pb_220.3	5	-0.4061	
Mg_279.0	100000	99030	99.0%
Mn_257.6	5	2.578	
Mo_202.0	5	3.926	
Ni_231.6	5	1.221	
K_766.4	5000	25.62	
Se_196.0	10	6.631	
Si_251.6	100	6.781	
Ag_328.0	5	0.2998	
Na_589.5	5000	41.5	
Sr_421.5	5	3.411	
Ti_334.9	5	3.655	
Tl_190.8	10	3.825	
Sn_189.9	5	-4.084	
V_292.4	5	1.086	
Zn_206.2	10	0.3822	

low interferents in sample (<1/2 ICSA conc)
No impact for all

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/6/2017 13:41 Found	% Recov
Al_396.1	105000	104600	99.6%
Sb_206.8	500	497.2	99.4%
As_189.0	500	484	96.8%
Ba_455.4	500	496	99.2%
Be_313.0	500	498.2	99.6%
B_249.6	500	502.3	100.5%
Cd_228.8	500	496.8	99.4%
Ca_317.9	105000	101800	97.0%
Cr_267.7	500	485.8	97.2%
Co_228.6	500	476.4	95.3%
Cu_324.7	500	512	102.4%
Fe_259.9	105000	100300	95.5%
Pb_220.3	500	469.9	94.0%
Mg_279.0	105000	105500	100.5%
Mn_257.6	500	488.5	97.7%
Mo_202.0	500	516.8	103.4%
Ni_231.6	500	464.5	92.9%
K_766.4	5000	4909	98.2%
Se_196.0	500	501.8	100.4%
Si_251.6	2500	2495	99.8%
Ag_328.0	250	254.7	101.9%
Na_589.5	5000	4967	99.3%
Sr_421.5	500	502.4	100.5%
Ti_334.9	500	501.2	100.2%
Tl_190.8	500	458.3	91.7%
Sn_189.9	500	484.2	96.8%
V_292.4	500	490.2	98.0%
Zn_206.2	500	482.7	96.5%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 15:46 Found	% Recov
Al_396.1	100000	99490	99.5%
Sb_206.8	5	2.033	
As_189.0	5	-0.6461	
Ba_455.4	5	-0.0877	
Be_313.0	1	-0.2614	
B_249.6	50	15.24	
Cd_228.8	1	-1.042	
Ca_317.9	100000	95560	95.6%
Cr_267.7	5	-0.8761	
Co_228.6	5	-1.771	
Cu_324.7	5	-0.4961	
Fe_259.9	100000	100200	100.2%
Pb_220.3	5	-1.351	
Mg_279.0	100000	100100	100.1%
Mn_257.6	5	2.599	
Mo_202.0	5	4.026	
Ni_231.6	5	1.167	
K_766.4	5000	-37.66	
Se_196.0	10	8.435	
Si_251.6	100	5.025	
Ag_328.0	5	0.7254	
Na_589.5	5000	49.07	
Sr_421.5	5	3.403	
Ti_334.9	5	3.799	
Tl_190.8	10	4.566	
Sn_189.9	5	-5.074	
V_292.4	5	0.8939	
Zn_206.2	10	0.5525	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/6/2017 15:49 Found	% Recov
Al_396.1	105000	105000	100.0%
Sb_206.8	500	541.5	108.3%
As_189.0	500	528.4	105.7%
Ba_455.4	500	490.8	98.2%
Be_313.0	500	485.9	97.2%
B_249.6	500	508.1	101.6%
Cd_228.8	500	522.5	104.5%
Ca_317.9	105000	101000	96.2%
Cr_267.7	500	483.5	96.7%
Co_228.6	500	512	102.4%
Cu_324.7	500	528.6	105.7%
Fe_259.9	105000	105800	100.8%
Pb_220.3	500	503.8	100.8%
Mg_279.0	105000	106400	101.3%
Mn_257.6	500	504.6	100.9%
Mo_202.0	500	549.5	109.9%
Ni_231.6	500	487.1	97.4%
K_766.4	5000	5053	101.1%
Se_196.0	500	543.9	108.8%
Si_251.6	2500	2503	100.1%
Ag_328.0	250	263.7	105.5%
Na_589.5	5000	5170	103.4%
Sr_421.5	500	491.9	98.4%
Ti_334.9	500	521.7	104.3%
Tl_190.8	500	477.6	95.5%
Sn_189.9	500	520.8	104.2%
V_292.4	500	508.9	101.8%
Zn_206.2	500	521.8	104.4%

No impact

Pace Analytical

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 16:34 Found	% Recov
Al_396.1	100000	104600	104.6%
Sb_206.8	5	1.491	
As_189.0	5	0.7885	
Ba_455.4	5	-0.0988	
Be_313.0	1	-0.1505	
B_249.6	50	9.611	
Cd_228.8	1	-1.182	
Ca_317.9	100000	99000	99.0%
Cr_267.7	5	-1.028	
Co_228.6	5	-1.502	
Cu_324.7	5	-1.61	
Fe_259.9	100000	97210	97.2%
Pb_220.3	5	-0.3976	
Mg_279.0	100000	99670	99.7%
Mn_257.6	5	2.524	
Mo_202.0	5	3.66	
Ni_231.6	5	1.236	
K_766.4	5000	19.94	
Se_196.0	10	7.945	
Si_251.6	100	13.5	
Ag_328.0	5	-0.1845	
Na_589.5	5000	112.5	
Sr_421.5	5	3.545	
Ti_334.9	5	3.469	
Tl_190.8	10	2.913	
Sn_189.9	5	-4.296	
V_292.4	5	0.7422	
Zn_206.2	10	0.6359	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/6/2017 16:37 Found	% Recov
Al_396.1	105000	108900	103.7%
Sb_206.8	500	514	102.8%
As_189.0	500	493.5	98.7%
Ba_455.4	500	516	103.2%
Be_313.0	500	512.8	102.6%
B_249.6	500	516.1	103.2%
Cd_228.8	500	519.2	103.8%
Ca_317.9	105000	103800	98.9%
Cr_267.7	500	508.1	101.6%
Co_228.6	500	495.2	99.0%
Cu_324.7	500	533.6	106.7%
Fe_259.9	105000	101200	96.4%
Pb_220.3	500	485.9	97.2%
Mg_279.0	105000	108300	103.1%
Mn_257.6	500	506.2	101.2%
Mo_202.0	500	540.9	108.2%
Ni_231.6	500	485.2	97.0%
K_766.4	5000	5113	102.3%
Se_196.0	500	511.1	102.2%
Si_251.6	2500	2520	100.8%
Ag_328.0	250	265	106.0%
Na_589.5	5000	5140	102.8%
Sr_421.5	500	526.1	105.2%
Ti_334.9	500	521.5	104.3%
Tl_190.8	500	478.5	95.7%
Sn_189.9	500	500.6	100.1%
V_292.4	500	509.9	102.0%
Zn_206.2	500	492	98.4%

No impact

Pace Analytical

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 19:22 Found	% Recov
Al_396.1	100000	104600	104.6%
Sb_206.8	5	1.486	
As_189.0	5	-0.4988	
Ba_455.4	5	0.2757	
Be_313.0	1	-0.2464	
B_249.6	50	13.03	
Cd_228.8	1	-1.087	
Ca_317.9	100000	101400	101.4%
Cr_267.7	5	-0.7168	
Co_228.6	5	-1.836	
Cu_324.7	5	-1.889	
Fe_259.9	100000	98600	98.6%
Pb_220.3	5	-0.1243	
Mg_279.0	100000	102300	102.3%
Mn_257.6	5	2.631	
Mo_202.0	5	3.615	
Ni_231.6	5	1.107	
K_766.4	5000	-11.83	
Se_196.0	10	7.741	
Si_251.6	100	4.832	
Ag_328.0	5	0.2008	
Na_589.5	5000	35.39	
Sr_421.5	5	3.276	
Ti_334.9	5	3.589	
Tl_190.8	10	4.229	
Sn_189.9	5	-4.269	
V_292.4	5	0.8145	
Zn_206.2	10	0.4562	

NO impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/6/2017 19:25 Found	% Recov
Al_396.1	105000	110300	105.0%
Sb_206.8	500	509.9	102.0%
As_189.0	500	490.9	98.2%
Ba_455.4	500	522.6	104.5%
Be_313.0	500	522.4	104.5%
B_249.6	500	514	102.8%
Cd_228.8	500	518.5	103.7%
Ca_317.9	105000	107500	102.4%
Cr_267.7	500	497.6	99.5%
Co_228.6	500	495.5	99.1%
Cu_324.7	500	517	103.4%
Fe_259.9	105000	104000	99.0%
Pb_220.3	500	485.9	97.2%
Mg_279.0	105000	109000	103.8%
Mn_257.6	500	505.6	101.1%
Mo_202.0	500	537.6	107.5%
Ni_231.6	500	485.4	97.1%
K_766.4	5000	5185	103.7%
Se_196.0	500	511	102.2%
Si_251.6	2500	2598	103.9%
Ag_328.0	250	260.3	104.1%
Na_589.5	5000	5276	105.5%
Sr_421.5	500	527.9	105.6%
Ti_334.9	500	512.4	102.5%
Tl_190.8	500	478.2	95.6%
Sn_189.9	500	500.2	100.0%
V_292.4	500	506.1	101.2%
Zn_206.2	500	498.4	99.7%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 21:30 Found	% Recov
Al_396.1	100000	104800	104.8%
Sb_206.8	5	-0.7753	
As_189.0	5	5.014	
Ba_455.4	5	0.1901	
Be_313.0	1	-0.4814	
B_249.6	50	19.83	
Cd_228.8	1	-1.054	
Ca_317.9	100000	102000	102.0%
Cr_267.7	5	-1.209	
Co_228.6	5	-2.028	
Cu_324.7	5	-2.62	
Fe_259.9	100000	97710	97.7%
Pb_220.3	5	-1.075	
Mg_279.0	100000	103800	103.8%
Mn_257.6	5	2.725	
Mo_202.0	5	3.699	
Ni_231.6	5	1.22	
K_766.4	5000	43.1	
Se_196.0	10	9.793	
Si_251.6	100	8.178	
Ag_328.0	5	-0.0763	
Na_589.5	5000	195.4	
Sr_421.5	5	3.603	
Ti_334.9	5	3.674	
Tl_190.8	10	-0.3036	
Sn_189.9	5	-3.56	
V_292.4	5	1.537	
Zn_206.2	10	0.3839	

Bracketing

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Bracketing

Element_WL/Mass	True Conc	ICSAB 10/6/2017 21:34 Found	% Recov
Al_396.1	105000	110800	105.5%
Sb_206.8	500	501.1	100.2%
As_189.0	500	486.9	97.4%
Ba_455.4	500	526.4	105.3%
Be_313.0	500	525.9	105.2%
B_249.6	500	524.4	104.9%
Cd_228.8	500	514.3	102.9%
Ca_317.9	105000	108500	103.3%
Cr_267.7	500	508.6	101.7%
Co_228.6	500	493	98.6%
Cu_324.7	500	516.8	103.4%
Fe_259.9	105000	103600	98.7%
Pb_220.3	500	482.6	96.5%
Mg_279.0	105000	110100	104.9%
Mn_257.6	500	509.7	101.9%
Mo_202.0	500	535.7	107.1%
Ni_231.6	500	483.4	96.7%
K_766.4	5000	5242	104.8%
Se_196.0	500	503.4	100.7%
Si_251.6	2500	2587	103.5%
Ag_328.0	250	262.1	104.8%
Na_589.5	5000	5428	108.6%
Sr_421.5	500	530.5	106.1%
Ti_334.9	500	517.6	103.5%
Tl_190.8	500	475.9	95.2%
Sn_189.9	500	496.6	99.3%
V_292.4	500	512.3	102.5%
Zn_206.2	500	499	99.8%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Bracketing

Element_WL/Mass	Conc or Limit	ICSA 10/6/2017 23:39 Found	% Recov
Al_396.1	100000	106900	106.9%
Sb_206.8	5	0.4652	
As_189.0	5	-3.577	
Ba_455.4	5	0.282	
Be_313.0	1	-0.3769	
B_249.6	50	11.26	
Cd_228.8	1	-0.9933	
Ca_317.9	100000	104900	104.9%
Cr_267.7	5	-0.8917	
Co_228.6	5	-2.016	
Cu_324.7	5	-2.78	
Fe_259.9	100000	98650	98.7%
Pb_220.3	5	-0.4433	
Mg_279.0	100000	105700	105.7%
Mn_257.6	5	2.777	
Mo_202.0	5	3.686	
Ni_231.6	5	1.335	
K_766.4	5000	44.62	
Se_196.0	10	8.199	
Si_251.6	100	15.17	
Ag_328.0	5	0.7988	
Na_589.5	5000	154.3	
Sr_421.5	5	3.527	
Ti_334.9	5	3.439	
Tl_190.8	10	1.753	
Sn_189.9	5	-4.721	
V_292.4	5	1.949	
Zn_206.2	10	0.4422	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Brackets

Element_WL/Mass	True Conc	ICSAB 10/6/2017 23:43 Found	% Recov
Al_396.1	105000	113200	107.8%
Sb_206.8	500	500.1	100.0%
As_189.0	500	481.5	96.3%
Ba_455.4	500	541	108.2%
Be_313.0	500	540.6	108.1%
B_249.6	500	528.1	105.6%
Cd_228.8	500	517.2	103.4%
Ca_317.9	105000	110800	105.5%
Cr_267.7	500	515.9	103.2%
Co_228.6	500	492	98.4%
Cu_324.7	500	524	104.8%
Fe_259.9	105000	103700	98.8%
Pb_220.3	500	483.4	96.7%
Mg_279.0	105000	112200	106.9%
Mn_257.6	500	515.5	103.1%
Mo_202.0	500	535.9	107.2%
Ni_231.6	500	486	97.2%
K_766.4	5000	5390	107.8%
Se_196.0	500	497.8	99.6%
Si_251.6	2500	2618	104.7%
Ag_328.0	250	263.6	105.4%
Na_589.5	5000	5467	109.3%
Sr_421.5	500	547.5	109.5%
Ti_334.9	500	522.5	104.5%
Tl_190.8	500	479.2	95.8%
Sn_189.9	500	496.8	99.4%
V_292.4	500	516.1	103.2%
Zn_206.2	500	495.6	99.1%

No impact

Pace Analytical

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/7/2017 1:48 Found	% Recov
Al_396.1	100000	106600	106.6%
Sb_206.8	5	0.4098	
As_189.0	5	3.545	
Ba_455.4	5	0.3992	
Be_313.0	1	-0.3912	
B_249.6	50	8.897	
Cd_228.8	1	-1.081	
Ca_317.9	100000	104100	104.1%
Cr_267.7	5	-0.6841	
Co_228.6	5	-1.883	
Cu_324.7	5	-2.668	
Fe_259.9	100000	97070	97.1%
Pb_220.3	5	-2.655	
Mg_279.0	100000	105500	105.5%
Mn_257.6	5	2.775	
Mo_202.0	5	3.917	
Ni_231.6	5	1.455	
K_766.4	5000	32.01	
Se_196.0	10	5.954	
Si_251.6	100	19.42	
Ag_328.0	5	0.4523	
Na_589.5	5000	103.5	
Sr_421.5	5	3.721	
Ti_334.9	5	3.716	
Tl_190.8	10	3.577	
Sn_189.9	5	-4.661	
V_292.4	5	0.9539	
Zn_206.2	10	0.481	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/7/2017 1:51 Found	% Recov
Al_396.1	105000	112800	107.4%
Sb_206.8	500	499.1	99.8%
As_189.0	500	479.9	96.0%
Ba_455.4	500	540.2	108.0%
Be_313.0	500	538.9	107.8%
B_249.6	500	527	105.4%
Cd_228.8	500	516.4	103.3%
Ca_317.9	105000	110500	105.2%
Cr_267.7	500	515.6	103.1%
Co_228.6	500	490.3	98.1%
Cu_324.7	500	522.2	104.4%
Fe_259.9	105000	102500	97.6%
Pb_220.3	500	479	95.8%
Mg_279.0	105000	112200	106.9%
Mn_257.6	500	514	102.8%
Mo_202.0	500	532.9	106.6%
Ni_231.6	500	485.8	97.2%
K_766.4	5000	5316	106.3%
Se_196.0	500	497.1	99.4%
Si_251.6	2500	2591	103.6%
Ag_328.0	250	263.4	105.4%
Na_589.5	5000	5425	108.5%
Sr_421.5	500	546.5	109.3%
Ti_334.9	500	520.7	104.1%
Tl_190.8	500	479.5	95.9%
Sn_189.9	500	494.9	99.0%
V_292.4	500	517.1	103.4%
Zn_206.2	500	493.3	98.7%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/7/2017 3:57 Found	% Recov
Al_396.1	100000	107800	107.8%
Sb_206.8	5	2.128	
As_189.0	5	-1.825	
Ba_455.4	5	0.2567	
Be_313.0	1	-0.3044	
B_249.6	50	10.27	
Cd_228.8	1	-1.205	
Ca_317.9	100000	105000	105.0%
Cr_267.7	5	-0.9482	
Co_228.6	5	-2.033	
Cu_324.7	5	-3.267	
Fe_259.9	100000	96670	96.7%
Pb_220.3	5	-0.8788	
Mg_279.0	100000	105500	105.5%
Mn_257.6	5	2.755	
Mo_202.0	5	3.71	
Ni_231.6	5	1.192	
K_766.4	5000	25.66	
Se_196.0	10	3.73	
Si_251.6	100	10.9	
Ag_328.0	5	0.3614	
Na_589.5	5000	211.5	
Sr_421.5	5	3.502	
Ti_334.9	5	3.621	
Tl_190.8	10	1.659	
Sn_189.9	5	-4.502	
V_292.4	5	1.125	
Zn_206.2	10	0.275	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/7/2017 4:00 Found	% Recov
Al_396.1	105000	114000	108.6%
Sb_206.8	500	494.9	99.0%
As_189.0	500	473.7	94.7%
Ba_455.4	500	548.8	109.8%
Be_313.0	500	543	108.6%
B_249.6	500	525.4	105.1%
Cd_228.8	500	516	103.2%
Ca_317.9	105000	111000	105.7%
Cr_267.7	500	513.2	102.6%
Co_228.6	500	487.8	97.6%
Cu_324.7	500	519.6	103.9%
Fe_259.9	105000	101600	96.8%
Pb_220.3	500	478	95.6%
Mg_279.0	105000	111700	106.4%
Mn_257.6	500	510.7	102.1%
Mo_202.0	500	533	106.6%
Ni_231.6	500	485.8	97.2%
K_766.4	5000	5406	108.1%
Se_196.0	500	498.4	99.7%
Si_251.6	2500	2573	102.9%
Ag_328.0	250	262.3	104.9%
Na_589.5	5000	5543	110.9%
Sr_421.5	500	554.9	111.0%
Ti_334.9	500	514.9	103.0%
Tl_190.8	500	476.6	95.3%
Sn_189.9	500	489	97.8%
V_292.4	500	512.3	102.5%
Zn_206.2	500	489	97.8%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/7/2017 6:04 Found	% Recov
Al_396.1	100000	107800	107.8%
Sb_206.8	5	1.658	
As_189.0	5	-2.052	
Ba_455.4	5	0.366	
Be_313.0	1	-0.3497	
B_249.6	50	6.448	
Cd_228.8	1	-1.112	
Ca_317.9	100000	105200	105.2%
Cr_267.7	5	-1.044	
Co_228.6	5	-1.542	
Cu_324.7	5	-3.709	
Fe_259.9	100000	96460	96.5%
Pb_220.3	5	-1.615	
Mg_279.0	100000	106200	106.2%
Mn_257.6	5	2.845	
Mo_202.0	5	3.65	
Ni_231.6	5	1.36	
K_766.4	5000	15.59	
Se_196.0	10	5.571	
Si_251.6	100	9.707	
Ag_328.0	5	0.0551	
Na_589.5	5000	82.65	
Sr_421.5	5	3.692	
Ti_334.9	5	3.514	
Tl_190.8	10	4.282	
Sn_189.9	5	-3.669	
V_292.4	5	0.8699	
Zn_206.2	10	0.2846	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/7/2017 6:08 Found	% Recov
Al_396.1	105000	114200	108.8%
Sb_206.8	500	492.9	98.6%
As_189.0	500	470.6	94.1%
Ba_455.4	500	550.9	110.2%
Be_313.0	500	544.8	109.0%
B_249.6	500	525.4	105.1%
Cd_228.8	500	514.8	103.0%
Ca_317.9	105000	111400	106.1%
Cr_267.7	500	519.2	103.8%
Co_228.6	500	484.9	97.0%
Cu_324.7	500	520.5	104.1%
Fe_259.9	105000	101000	96.2%
Pb_220.3	500	477.9	95.6%
Mg_279.0	105000	113200	107.8%
Mn_257.6	500	515.8	103.2%
Mo_202.0	500	531.4	106.3%
Ni_231.6	500	484.8	97.0%
K_766.4	5000	5399	108.0%
Se_196.0	500	493.3	98.7%
Si_251.6	2500	2548	101.9%
Ag_328.0	250	264.2	105.7%
Na_589.5	5000	5456	109.1%
Sr_421.5	500	556.8	111.4%
Ti_334.9	500	519.3	103.9%
Tl_190.8	500	477.6	95.5%
Sn_189.9	500	489.8	98.0%
V_292.4	500	517.1	103.4%
Zn_206.2	500	486.2	97.2%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/7/2017 7:57 Found	% Recov
Al_396.1	100000	105900	105.9%
Sb_206.8	5	1.211	
As_189.0	5	1.138	
Ba_455.4	5	0.0675	
Be_313.0	1	-0.2158	
B_249.6	50	8.772	
Cd_228.8	1	-1.164	
Ca_317.9	100000	102900	102.9%
Cr_267.7	5	-0.889	
Co_228.6	5	-1.878	
Cu_324.7	5	-2.853	
Fe_259.9	100000	95490	95.5%
Pb_220.3	5	-1.659	
Mg_279.0	100000	104900	104.9%
Mn_257.6	5	2.771	
Mo_202.0	5	3.77	
Ni_231.6	5	1.701	
K_766.4	5000	1.322	
Se_196.0	10	8.546	
Si_251.6	100	16.18	
Ag_328.0	5	0.9392	
Na_589.5	5000	56.03	
Sr_421.5	5	3.594	
Ti_334.9	5	3.962	
Tl_190.8	10	1.814	
Sn_189.9	5	-3.763	
V_292.4	5	2.069	
Zn_206.2	10	0.3869	

No impact

Pace Analytical™

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	True Conc	ICSAB 10/7/2017 8:00 Found	% Recov
Al_396.1	105000	111800	106.5%
Sb_206.8	500	496.1	99.2%
As_189.0	500	472.5	94.5%
Ba_455.4	500	536.5	107.3%
Be_313.0	500	529	105.8%
B_249.6	500	520.7	104.1%
Cd_228.8	500	514.8	103.0%
Ca_317.9	105000	109200	104.0%
Cr_267.7	500	506.3	101.3%
Co_228.6	500	488.9	97.8%
Cu_324.7	500	515	103.0%
Fe_259.9	105000	100900	96.1%
Pb_220.3	500	480.3	96.1%
Mg_279.0	105000	111700	106.4%
Mn_257.6	500	512	102.4%
Mo_202.0	500	531.3	106.3%
Ni_231.6	500	483.7	96.7%
K_766.4	5000	5361	107.2%
Se_196.0	500	495.5	99.1%
Si_251.6	2500	2506	100.2%
Ag_328.0	250	261.9	104.8%
Na_589.5	5000	5440	108.8%
Sr_421.5	500	540.2	108.0%
Ti_334.9	500	514.7	102.9%
Tl_190.8	500	477.2	95.4%
Sn_189.9	500	493.4	98.7%
V_292.4	500	511.9	102.4%
Zn_206.2	500	491.5	98.3%

No impact

Pace Analytical™

ICP ICSA SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSA: 80% - 120%
<2x RL for Targets

Element_WL/Mass	Conc or Limit	ICSA 10/7/2017 9:06 Found	% Recov
Al_396.1	100000	104900	104.9%
Sb_206.8	5	1.417	
As_189.0	5	-3.347	
Ba_455.4	5	0.2197	
Be_313.0	1	-0.1454	
B_249.6	50	32.55	
Cd_228.8	1	-1.316	
Ca_317.9	100000	102100	102.1%
Cr_267.7	5	-0.6172	
Co_228.6	5	-2.019	
Cu_324.7	5	-2.843	
Fe_259.9	100000	96610	96.6%
Pb_220.3	5	-0.2188	
Mg_279.0	100000	105900	105.9%
Mn_257.6	5	2.802	
Mo_202.0	5	3.944	
Ni_231.6	5	0.7633	
K_766.4	5000	18.98	
Se_196.0	10	6.332	
Si_251.6	100	18.53	
Ag_328.0	5	0.867	
Na_589.5	1000	66.73	
Sr_421.5	5	3.497	
Ti_334.9	10	3.823	
Tl_190.8	5	4.132	
Sn_189.9	5	-3.078	
V_292.4	5	1.398	
Zn_206.2	10	0.32	

No impact

Pace Analytical

ICP ICSAB SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Standard Source: Ultra Scientific

Acceptable Range:

ICSAB: 80% - 120%

Element_WL/Mass	ICSAB 10/7/2017 9:09		
	True Conc	Found	% Recov
Al_396.1	100100	111800	111.7%
Sb_206.8	100	498.3	498.3%
As_189.0	100	479.4	479.4%
Ba_455.4	100	535.4	535.4%
Be_313.0	100	527.4	527.4%
B_249.6	100	542.7	542.7%
Cd_228.8	100	515.5	515.5%
Ca_317.9	100100	109000	108.9%
Cr_267.7	100	507.1	507.1%
Co_228.6	100	492	492.0%
Cu_324.7	100	514.5	514.5%
Fe_259.9	101000	101900	100.9%
Pb_220.3	100	484.6	484.6%
Mg_279.0	100100	111900	111.8%
Mn_257.6	100	514.4	514.4%
Mo_202.0	100	533.4	533.4%
Ni_231.6	100	485.2	485.2%
K_766.4	1000	5371	537.1%
Se_196.0	100	493.7	493.7%
Si_251.6	500	2500	500.0%
Ag_328.0	50	263.6	527.2%
Na_589.5	1000	5453	545.3%
Sr_421.5	100	537.4	537.4%
Ti_334.9	100	518.3	518.3%
Tl_190.8	100	475.4	475.4%
Sn_189.9	100	497.6	497.6%
V_292.4	100	514.9	514.9%
Zn_206.2	100	498.9	498.9%

No impact

IDL * By 50

N/A
all Batch
QC
non-project

IDLs						10	1
Serial Dilution (SDL)							
		Batch	QC Flag	Dilution:		Fe_259.9	Mn_257.6
Parent:	92356347001	23886		1		60630	3873
SDL:	92356347001L	23886		5		11750	782.9
SDL RPD:						3.10	1.07
QC:							
Parent:	92356841002	23844		1		12260	321.2
SDL:	92356841002L	23844		5		2336	65.9
SDL RPD:						4.73	2.58
QC:							
Parent:	92356986001	23883		1		1395	34.25
SDL:	92356986001L	23883		5		258.5	6.499
SDL RPD:						7.35	5.12
QC:							
Parent:	92357686001	23891		1		46.65	7.433
SDL:	92357686001L	23891		5		3.806	1.422
SDL RPD:						59.21	4.35
QC:							
Parent:	92357328004	23868		1		0.2281	-0.0091
SDL:	92357328004L	23868		5		-2.589	0.0019
SDL RPD:						5775.14	-204.40
QC:							
Parent:	92357250008	23876		1		2312	964.9
SDL:	92357250008L	23876		5		441.3	189
SDL RPD:						4.56	2.06
QC:							
Parent:	92356784001	23869		1		966.7	24.37
SDL:	92356784001L	23869		5		192.3	4.838
SDL RPD:						0.54	0.74
QC:							
Parent:	92357076010	23839		1		4.289	1.49
SDL:	92357076010L	23839		5		-2.457	0.2628
SDL RPD:						386.43	11.81
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							
Parent:							
SDL:							
SDL RPD:							
QC:							

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92356347001L

Parent Sample ID: 92356347001

Batch: 23886

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	60630	11750	5	58750	3.15	10
Mn_257.6	3873	782.9	5	3914.5	1.07	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92356841002L

Parent Sample ID: 92356841002

Batch: 23844

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	12260	2336	5	11680	4.85	10
Mn_257.6	321.2	65.9	5	329.5	2.55	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92356986001L

Parent Sample ID: 92356986001

Batch: 23883

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	1395	258.5	5	1292.5	7.63	10
Mn_257.6	34.25	6.499	5	32.495	5.26	10

N/A

Pace Analytical™

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92357686001L

Parent Sample ID: 92357686001

Batch: 23891

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	46.65	3.806	5	19.03	84.10	10
Mn_257.6	7.433	1.422	5	7.11	4.44	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92357328004L

Parent Sample ID: 92357328004

Batch: 23868

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	0.2281	-2.589	5	-12.945	207.17	10
Mn_257.6	-0.0091	0.0019	5	0.0095	9300.00	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92357250008L

Parent Sample ID: 92357250008

Batch: 23876

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	2312	441.3	5	2206.5	4.67	10
Mn_257.6	964.9	189	5	945	2.08	10

N/A

Pace Analytical

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92356784001L

Parent Sample ID: 92356784001

Batch: 23869

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	966.7	192.3	5	961.5	0.54	10
Mn_257.6	24.37	4.838	5	24.19	0.74	10

N/A

Pace Analytical™

FORM VIII INORGANIC-1
SERIAL DILUTIONS

Lab Project Number: 92357284

Instrument: Thermo 6500

Units: ug/L

% Difference: <10%

Sample No. 92357076010L

Parent Sample ID: 92357076010

Batch: 23839

Element_WL/Mass	Initial Result	Serial Dilution Result (raw result)	Dilution Factor	Serial Dilution Result	% Difference	Control Limit %D
Fe_259.9	4.289	-2.457	5	-12.285	414.56	10
Mn_257.6	1.49	0.2628	5	1.314	12.55	10

N/A

Pace Analytical™

ICP MDL SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Element	MDL µg/L	Date of MDL
Aluminum	16.18	9/7/2017
Antimony	2.76	9/7/2017
Arsenic	2.99	9/7/2017
Barium	0.27	9/7/2017
Beryllium	0.32	9/7/2017
Boron	4.27	9/7/2017
Cadmium	0.22	9/7/2017
Calcium	11.78	9/7/2017
Chromium	1.56	9/7/2017
Cobalt	0.59	9/7/2017
Copper	3.19	9/7/2017
Iron	10.24	9/7/2017
Lead	1.41	9/7/2017
Magnesium	12.37	9/7/2017
Manganese	0.18	9/7/2017
Molybdenum	0.69	9/7/2017
Nickel	0.81	9/7/2017
Potassium	954.4	9/7/2017
Selenium	3.09	9/7/2017
Silicon	16.71	9/7/2017
Silver	0.77	9/7/2017
Sodium	23.5	9/7/2017
Strontium	0.58	9/7/2017
Thallium	1.19	9/7/2017
Tin	1.36	9/7/2017
Titanium	1.56	9/7/2017
Vanadium	1.15	9/7/2017
Zinc	2.53	9/7/2017

Pace Analytical

ICP IEC SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Date of IEC's: 11/10/2016

Analyte	Al	Ba	Ca	Cd	Co	Cr	Cu	Fe	Mg	Mn	Mo	Ni	Si	Sn	Ti	V	Na
Ag	0.00000	0.00001	0.00000	0.00001	0.00001	0.00003	0.00000	0.00000	0.00000	0.00019	-0.00009	0.00000	0.00000	0.00002	0.00002	-0.00095	0.000001
As	0.00003	0.00021	0.00002	-0.00018	-0.00017	0.00109	-0.00006	-0.00006	-0.00001	-0.00001	0.00097	-0.00042	0.00001	0.00010	-0.00010	0.00006	0.000015
Co	-0.00124	0.00004	0.00000	0.00000		0.00000	0.00003	-0.00033	0.00000	0.00005	0.00016	0.00002	0.00002	-0.00001	0.00000	0.00000	0.000004
Cr	0.00001	-0.00003	-0.00001	-0.00008	-0.00142		-0.00405	0.00011	0.00003	0.00001	-0.00095	-0.00004	-0.00001	-0.00003	-0.00005	0.01051	-0.000004
Se	0.00000	0.00032	-0.00011	-0.00006	-0.00001	0.00009	0.00009	0.00001	0.00001	0.00013	0.00033	0.00009	-0.00003	0.00012	0.00035	0.00030	-0.000009
Zn	0.00000	0.00002	0.00000	0.00002	-0.00001	-0.00002	0.00433	0.00025	0.00001	0.00000	0.00000	0.00571	0.00003	0.00002	-0.00009	0.00000	0.000007
B	0.00008	0.00046	0.00003	0.00029	0.00112	0.00050	0.00019	-0.00047	0.00002	0.00021	0.00008	0.00013	0.00089	0.00043	0.00031	0.00011	0.000012
Ba	0.00000		0.00004	0.00002	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000067
Be	0.00000	-0.00001	0.00000	-0.00001	-0.00001	-0.00001	-0.00001	0.00000	0.00000	-0.00001	-0.00001	-0.00001	0.00000	-0.00001	-0.00010	0.00049	-0.000003
Cd	-0.00002	0.00000	0.00002		0.00001	-0.00001	0.00000	0.00003	0.00000	0.00001	-0.00003	-0.00001	0.00000	0.00000	0.00000	0.00001	0
Cu	0.00000	0.00000	0.00000	0.00001	0.00002	0.00001		0.00003	0.00000	0.00001	0.00048	0.00002	0.00000	0.00002	-0.00007	-0.00007	0.000007
Mn	-0.00001	0.00000	0.00000	0.00000	0.00000	-0.00004	0.00000	-0.00001	0.00000		0.00029	0.00000	0.00000	0.00000	0.00000	0.00000	0
Mo	0.00005	0.00003	-0.00001	0.00000	-0.00004	-0.00001	-0.00010	0.00001	0.00000	-0.00004		0.00110	0.00009	0.00006	0.00005	0.00000	-0.000002
Ni	-0.00001	-0.00013	-0.00001	-0.00003	-0.00057	-0.00007	0.00000	-0.00002	-0.00007	-0.00001	-0.00006		0.00001	0.00002	-0.00003	-0.00010	-0.000002
Pb	0.00011	0.00000	0.00000	0.00002	-0.00003	0.00014	-0.00009	0.00020	0.00000	0.00013	-0.00151	-0.00008	-0.00004	0.00009	-0.00002	-0.00012	-0.000026
Sb	-0.00004	0.00005	-0.00002	-0.00008	0.00003	0.00555	-0.00002	0.00009	0.00000	-0.00004	-0.00395	0.00005	-0.00003	0.00005	0.00016	-0.00002	-0.000015
Si	0.00006	0.00001	0.00005	-0.00024	0.00008	-0.00081	0.00004	0.00000	0.00007	0.00040	-0.00164	0.00002		0.00609	0.00619	0.01013	0.000134
Sn	-0.00003	-0.00024	-0.00001	-0.00006	-0.00005	-0.00016	-0.00014	0.00000	-0.00001	-0.00007	-0.00025	-0.00055	0.00006		-0.00408	0.00007	-0.000013
Sr	0.00000	0.00001	0.00002	0.00000	0.00001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000001
Ti	0.00000	0.00000	0.00000	0.00000	0.00000	0.00005	-0.00002	0.00000	0.00000	0.00000	-0.00002	0.00000	-0.00002	0.00000		0.00041	0.000001
Tl	0.00007	0.00021	0.00000	0.00004	0.00160	0.00042	0.00009	0.00000	-0.00001	0.00001	-0.00014	0.00004	0.00000	-0.00005	-0.00220	-0.00156	0.000009
V	0.00000	-0.00001	0.00000	-0.00001	0.00000	-0.00019	0.00000	0.00000	0.00000	-0.00011	-0.00001	0.00000	0.00000	-0.00002	-0.00135		0.000002
Al		0.00386	0.00008	0.00034	0.00018	0.00016	0.00029	0.00004	0.00005	0.00005	0.00460	0.00035	0.00043	0.00049	0.00032	0.01461	0.000055
Ca	-0.00088	-0.00018		0.00346	0.00006	-0.00016	-0.00032	-0.00007	-0.00005	-0.00056	0.00299	-0.00035	-0.00001	-0.00052	-0.00043	0.00199	-0.000059
Fe	0.00003	-0.00004	-0.00001	0.00005	-0.00004	0.00045	-0.00003		0.00056	0.00007	-0.00048	-0.00003	0.00018	0.00000	-0.00011	0.00006	0.000007
Mg	0.00002	-0.00002	0.00004	0.00024	0.00021	0.00007	0.00015	0.00005		-0.00161	-0.00697	0.00019	0.00002	0.00021	-0.00337	0.00004	0.000009
K	0.00075	0.00223	0.00061	0.00233	0.00255	0.00256	0.00279	0.00287	0.00077	0.00265	0.00235	0.00261	0.00043	0.00238	0.00232	0.00244	0.000437
Na	0.00514	0.63052	0.00004	0.00006	-0.00005	-0.00007	-0.00006	0.00000	0.00003	-0.00007	0.00044	-0.00007	0.00060	0.00016	-0.00003	-0.00003	

ICP LINEAR RANGE SUMMARY

Lab Project Number / SDG: 92357284

Instrument: Thermo 6500

Units: ug/L

Element	Linear Range	Date of LR
Aluminum	100000	9/7/2017
Antimony	10000	9/7/2017
Arsenic	10000	9/7/2017
Barium	10000	9/7/2017
Beryllium	10000	9/7/2017
Boron	10000	9/7/2017
Cadmium	10000	9/7/2017
Calcium	100000	9/7/2017
Chromium	10000	9/7/2017
Cobalt	10000	9/7/2017
Copper	10000	9/7/2017
Iron	100000	9/7/2017
Lead	10000	9/7/2017
Magnesium	100000	9/7/2017
Manganese	10000	9/7/2017
Molybdenum	10000	9/7/2017
Nickel	10000	9/7/2017
Potassium	100000	9/7/2017
Selenium	10000	9/7/2017
Silver	50000	9/7/2017
Silicon	5000	9/7/2017
Sodium	100000	9/7/2017
Strontium	10000	9/7/2017
Thallium	10000	9/7/2017
Tin	10000	9/7/2017
Titanium	10000	9/7/2017
Vanadium	10000	9/7/2017
Zinc	10000	9/7/2017

Pace Analytical	Document Name: ICP Calibration Table and Std Reference #	Issued Date: May 1,2014
	Document No.: F-ASV-M-004-rev.04	Issuing Authorities: Pace Asheville Quality Office

ICP Calibration Table and Standard Reference Numbers

Instrument: Thermo ICAP 6500 - Serial Number: 20104901

Start Run Date: 10/06/17

Analyst: SMH

Internal Std. (2ppm Y) 232- 25978

Instrument Rinse 231- 25987

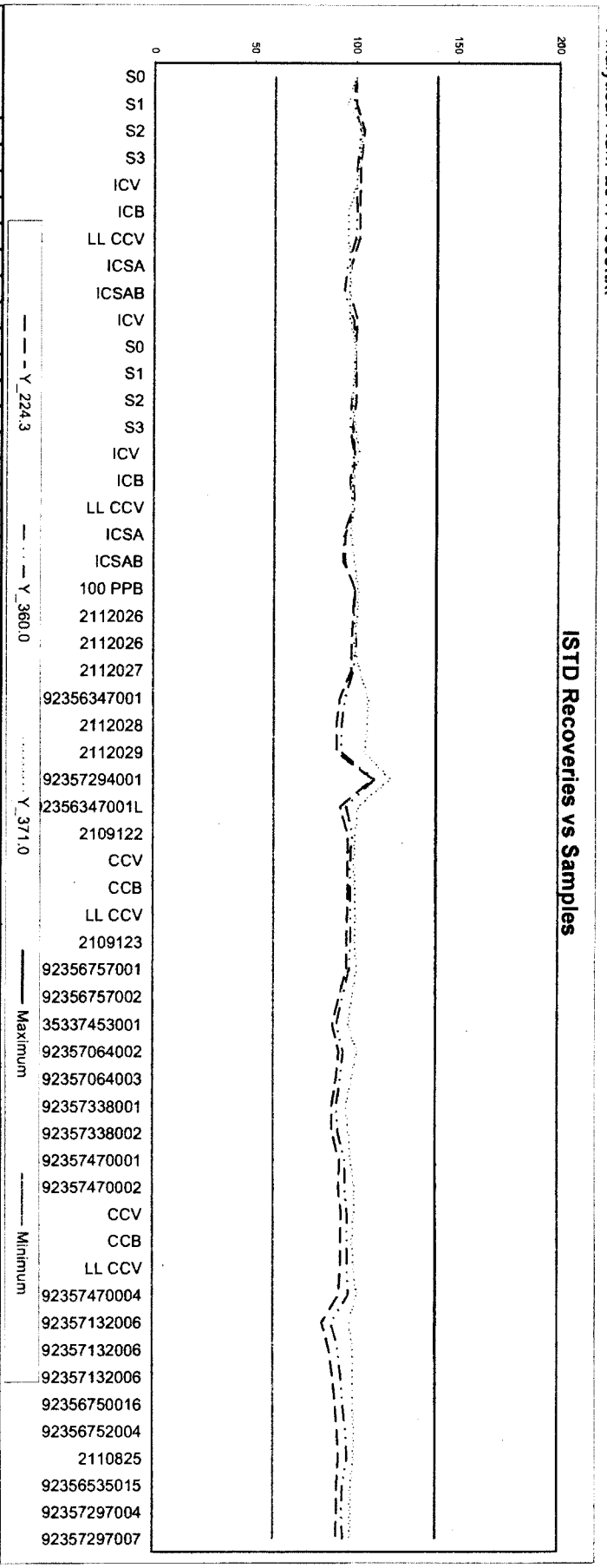
Element	Symbol	Wavelength	Cal Blank	1000 Std	ICV	500 Std / CCV	5 Std / LL CCV	ICSA	ICSA-B
			PS- 26015	PS- 25888	PS- 25988	PS- 25952	PS- 25933	PS- 25886	PS- 25884
			ug/L Value	ug/L Value	ug/L Value	ug/L Value	ug/L Value	ug/L Value	ug/L Value
Aluminum	Al	396.152	0	10,000	5,000	5,000	100	100,000	101,000
Antimony	Sb	206.833	0	1,000	500	500	5		100
Arsenic	As	189.042	0	1,000	500	500	10		100
Barium	Ba	455.403	0	1,000	500	500	5		100
Berrylium	Be	313.042	0	1,000	500	500	1		100
Boron	B	249.678	0	1,000	500	500	50		100
Cadmium	Cd	228.802	0	1,000	500	500	1		100
Calcium	Ca	317.933	0	10,000	5,000	5,000	100	100,000	101,000
Chromium	Cr	267.716	0	1,000	500	500	5		100
Cobalt	Co	228.616	0	1,000	500	500	5		100
Copper	Cu	324.754	0	1,000	500	500	5		100
Iron	Fe	259.940	0	10,000	5,000	5,000	50	100,000	101,000
Lead	Pb	220.353	0	1,000	500	500	5		100
Magnesium	Mg	279.079	0	10,000	5,000	5,000	100	100,000	101,000
Manganese	Mn	257.61	0	1,000	500	500	5		100
Molybdenum	Mo	202.03	0	1,000	500	500	5		100
Nickel	Ni	231.604	0	1,000	500	500	5		100
Potassium	K	766.491	0	10,000	5,000	5,000	5,000		1,000
Selenium	Se	196.09	0	1,000	500	500	10		100
Silver	Ag	328.068	0	500	250	250	5		50
Silicon	Si	251.611	0	10,000	2,500	2,500	100		500
Sodium	Na	589.592	0	10,000	5,000	5,000	1,000		1,000
Strontium	Sr	421.552	0	1,000	500	500	5		100
Thallium	Tl	190.856	0	1,000	500	500	10		100
Tin	Sn	189.989	0	1,000	500	500	5		100
Titanium	Ti	334.904	0	1,000	500	500	5		100
Vanadium	V	292.402	0	1,000	500	500	5		100
Zinc	Zn	206.2	0	1,000	500	500	10		100

Element, Wavelength and Order	Date of Fit	Date of Cal.	Type of Fit	Weighting	A0	A1	A2	n (Exponent)
Ag 328.068 {103}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	0.000372	0.000174	0.000000	1.000000
Al 396.152 { 85}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	0.000594	0.000100	0.000000	1.000000
As 189.042 {479}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	-0.000350	0.000145	0.000000	1.000000
B 249.678 {135}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	None	-0.000089	0.000130	0.000000	1.000000
Ba 455.403 { 74}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	0.009247	0.007675	0.000000	1.000000
Be 313.042 {108}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	-0.000118	0.003520	0.000000	1.000000
Ca 317.933 {106}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	0.005690	0.000156	0.000000	1.000000
Cd 228.802 {448}	10/6/2017 13:28:34	10/6/2017 13:28:34	Linear	1/Conc	0.000152	0.002834	0.000000	1.000000
Co 228.616 {448}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.003657	0.002621	0.000000	1.000000
Cr 267.716 {126}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000055	0.000297	0.000000	1.000000
Cu 324.754 {104}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.002979	0.000534	0.000000	1.000000
Fe 259.940 {130}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.000449	0.000081	0.000000	1.000000
K 766.490 { 44}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	None	0.008307	0.000084	0.000000	1.000000
Mg 279.079 {121}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000034	0.000021	0.000000	1.000000
Mn 257.610 {131}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.000027	0.001796	0.000000	1.000000
Mo 202.030 {467}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.003743	0.003077	0.000000	1.000000
Na 589.592 { 57}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	None	-0.000804	0.000285	0.000000	1.000000
Ni 231.604 {446}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.002505	0.002058	0.000000	1.000000
Pb 220.353 {453}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000466	0.000967	0.000000	1.000000
Sb 206.833 {463}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.001360	0.000557	0.000000	1.000000
Se 196.090 {472}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.001466	0.000292	0.000000	1.000000
Si 251.611 {134}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	None	-0.000034	0.000032	0.000000	1.000000
Sn 189.989 {478}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000706	0.000572	0.000000	1.000000
Sr 421.552 { 80}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000304	0.007001	0.000000	1.000000
Ti 334.904 {101}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000702	0.000451	0.000000	1.000000
Tl 190.856 {477}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.002406	0.000404	0.000000	1.000000
V 292.402 {115}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	-0.000260	0.000382	0.000000	1.000000
Y 224.306 {451}*	3/15/2017 12:36:57	2/17/2011 10:37:08	Linear	1/Conc	0.000000	0.000000	0.000000	1.000000
Y 360.073 { 94}*	3/15/2017 12:36:57	2/17/2011 10:37:08	Linear	None	0.000000	0.000000	0.000000	1.000000
Y 371.030 { 91}*	3/15/2017 12:36:57	2/17/2011 10:37:08	Linear	1/Conc	0.000000	0.000000	0.000000	1.000000
Zn 206.200 {464}	10/6/2017 13:28:35	10/6/2017 13:28:35	Linear	1/Conc	0.002361	0.002991	0.000000	1.000000

Element, Wavelength and Order	Correlation	Std Error of Est	Predicted MDL	Predicted MQL	Status	Reslope		QC Norm	
						Slope	Y-Int	Slope factor	Offset
Ag 328.068 {103}	0.999869	0.000008	0.941865	3.139549	OK.	1.000000	0.000000	1	0
Al 396.152 { 85}	0.999898	0.000079	18.124510	60.415033	OK.	1.000000	0.000000	1	0
As 189.042 {479}	0.999869	0.000013	3.247914	10.826381	OK.	1.000000	0.000000	1	0
B 249.678 {135}	0.999820	0.001396	1.496574	4.988579	OK.	1.000000	0.000000	1	0
Ba 455.403 { 74}	0.999947	0.000307	0.241040	0.803466	OK.	1.000000	0.000000	1	0
Be 313.042 {108}	0.999961	0.000054	0.174482	0.581606	OK.	1.000000	0.000000	1	0
Ca 317.933 {106}	0.999947	0.000088	4.503809	15.012695	OK.	1.000000	0.000000	1	0
Cd 228.802 {448}	0.999923	0.000061	0.253010	0.843366	OK.	1.000000	0.000000	1	0
Co 228.616 {448}	0.999930	0.000121	0.368539	1.228463	OK.	1.000000	0.000000	1	0
Cr 267.716 {126}	0.999975	0.000008	0.510188	1.700628	OK.	1.000000	0.000000	1	0
Cu 324.754 {104}	0.999913	0.000027	0.447983	1.493278	OK.	1.000000	0.000000	1	0
Fe 259.940 {130}	0.999974	0.000023	4.848882	16.162939	OK.	1.000000	0.000000	1	0
K 766.490 { 44}	0.999935	0.006804	37.372758	124.575860	OK.	1.000000	0.000000	1	0
Mg 279.079 {121}	0.999916	0.000015	7.518646	25.062152	OK.	1.000000	0.000000	1	0
Mn 257.610 {131}	0.999966	0.000058	0.087597	0.291992	OK.	1.000000	0.000000	1	0
Mo 202.030 {467}	0.999796	0.000241	0.254106	0.847019	OK.	1.000000	0.000000	1	0
Na 589.592 { 57}	0.999964	0.013470	12.160021	40.533405	OK.	1.000000	0.000000	1	0
Ni 231.604 {446}	0.999953	0.000077	0.489783	1.632610	OK.	1.000000	0.000000	1	0
Pb 220.353 {453}	0.999907	0.000051	1.449895	4.832984	OK.	1.000000	0.000000	1	0
Sb 206.833 {463}	0.999868	0.000035	1.634168	5.447227	OK.	1.000000	0.000000	1	0
Se 196.090 {472}	0.999870	0.000026	2.463700	8.212332	OK.	1.000000	0.000000	1	0
Si 251.611 {134}	0.999939	0.001023	11.598449	38.661496	OK.	1.000000	0.000000	1	0
Sn 189.989 {478}	0.999948	0.000023	1.053963	3.513209	OK.	1.000000	0.000000	1	0
Sr 421.552 { 80}	0.999945	0.000285	0.203728	0.679093	OK.	1.000000	0.000000	1	0
Ti 334.904 {101}	0.999917	0.000022	0.682214	2.274047	OK.	1.000000	0.000000	1	0
Tl 190.856 {477}	0.999924	0.000027	2.093490	6.978299	OK.	1.000000	0.000000	1	0
V 292.402 {115}	0.999882	0.000023	0.698665	2.328882	OK.	1.000000	0.000000	1	0
Y 224.306 {451}*	0.000000	0.000000	0.000537	0.001789	Warnin	1.000000	0.000000	1	0
Y 360.073 { 94}*	0.000000	0.000000	0.000095	0.000317	Warnin	1.000000	0.000000	1	0
Y 371.030 { 91}*	0.000000	0.000000	0.000283	0.000945	Warnin	1.000000	0.000000	1	0
Zn 206.200 {464}	0.999927	0.000199	0.249929	0.833097	OK.	1.000000	0.000000	1	0

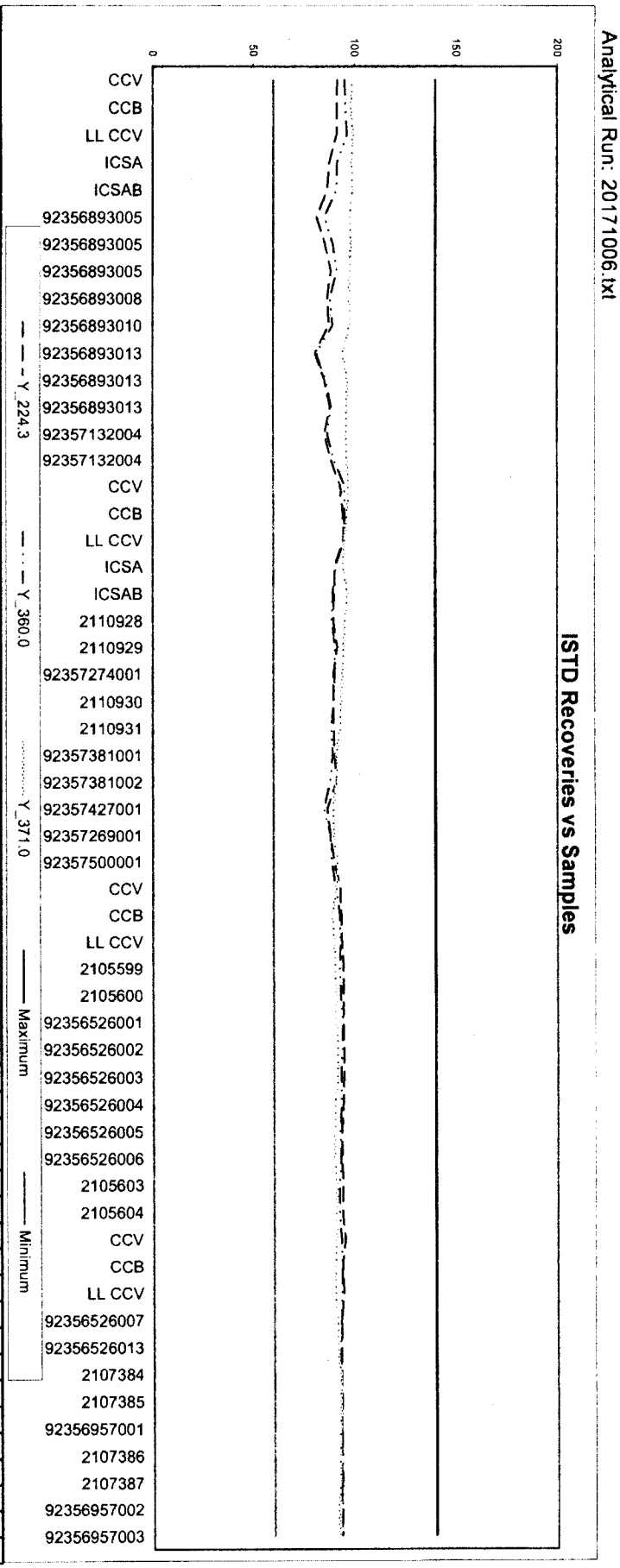
Analytical Run: 20171006.txt

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
1	S0	1	60	140	100	100	100	10/6/2017 12:41
2	S1	1	60	140	95.83	98.92	100.2	10/6/2017 12:44
3	S2	1	60	140	103.2	102.5	104	10/6/2017 12:48
4	S3	1	60	140	102	101	102.6	10/6/2017 12:51
5	ICV	1	60	140	100	100.3	102.2	10/6/2017 12:53
6	ICB	1	60	140	96.15	100.6	101.9	10/6/2017 12:56
7	LL CCV	1	60	140	96.44	100	101.8	10/6/2017 13:00
8	ICSA	1	60	140	97.36	95.77	97.65	10/6/2017 13:03
9	ICSAB	1	60	140	97	94.39	96.95	10/6/2017 13:06
10	ICV	1	60	140	97.26	99.04	100.9	10/6/2017 13:12
11	S0	1	60	140	100	100	100	10/6/2017 13:16
12	S1	1	60	140	99.33	99.91	100.2	10/6/2017 13:19
13	S2	1	60	140	98.52	98.08	100.4	10/6/2017 13:22
14	S3	1	60	140	99.77	97.32	98.77	10/6/2017 13:25
15	ICV	1	60	140	102.1	99.57	99.71	10/6/2017 13:28
16	ICB	1	60	140	98.27	97.37	99.19	10/6/2017 13:31
17	LL CCV	1	60	140	98.89	99.09	99.56	10/6/2017 13:34
18	ICSA	1	60	140	97.86	94.51	95.28	10/6/2017 13:37
19	ICSAB	1	60	140	99.67	94.2	94.88	10/6/2017 13:41
20	100 PPB	1	60	140	101.6	100.3	99.92	10/6/2017 13:44
21	2112026	1	60	140	101.2	99.58	99.12	10/6/2017 13:47
22	2112026	1	60	140	99.71	100.6	98.4	10/6/2017 13:50
23	2112027	1	60	140	102.2	99.26	98.28	10/6/2017 13:53
24	92356347001	1	60	140	106.6	95.29	92.79	10/6/2017 13:56
25	2112028	1	60	140	106.2	93.68	91.06	10/6/2017 13:59
26	2112029	1	60	140	105	93.63	91.21	10/6/2017 14:02
27	92357294001	1	60	140	117.6	109.8	109	10/6/2017 14:05
28	92356347001L	5	60	140	101.6	95.92	92.9	10/6/2017 14:08
29	2109122	1	60	140	100.5	99.01	96.75	10/6/2017 14:12
30	CCV	1	60	140	99.72	98.13	96.66	10/6/2017 14:15
31	CCB	1	60	140	100.2	97.94	96.87	10/6/2017 14:18
32	LL CCV	1	60	140	100.7	98.09	96.53	10/6/2017 14:21
33	2109123	1	60	140	99.99	98.1	96.1	10/6/2017 14:24
34	92356757001	1	60	140	101.3	97.58	96.28	10/6/2017 14:27
35	92356757002	1	60	140	98.89	94.59	92.68	10/6/2017 14:30
36	35337453001	1	60	140	96.98	91.38	89.26	10/6/2017 14:33
37	92357064002	1	60	140	101.3	94.63	92.37	10/6/2017 14:36
38	92357064003	1	60	140	98.73	93.2	91.2	10/6/2017 14:39
39	92357338001	1	60	140	95.97	91.27	89.07	10/6/2017 14:42
40	92357338002	1	60	140	97.33	92.27	89.36	10/6/2017 14:46
41	92357470001	1	60	140	98.43	95.6	93.06	10/6/2017 14:49
42	92357470002	1	60	140	100.1	95.64	92.37	10/6/2017 14:52
43	CCV	1	60	140	100.1	96.66	93.83	10/6/2017 14:55
44	CCB	1	60	140	99.01	96.93	93.45	10/6/2017 14:58
45	LL CCV	1	60	140	99.81	96.8	93.36	10/6/2017 15:02
46	92357470004	1	60	140	101.4	97.2	92.64	10/6/2017 15:05
47	92357132006	2	60	140	97.79	89.04	84.3	10/6/2017 15:08
48	92357132006	5	60	140	99.55	92.21	87.86	10/6/2017 15:11
49	92357132006	10	60	140	99.47	93.71	89.71	10/6/2017 15:14
50	92356750016	5	60	140	99.55	94.65	90.89	10/6/2017 15:17
51	92356752004	5	60	140	100	96.09	91.92	10/6/2017 15:20
52	2110825	1	60	140	99.75	96.72	92.53	10/6/2017 15:24
53	92356535015	5	60	140	98.61	94.5	91.68	10/6/2017 15:27
54	92357297004	25	60	140	98.15	94.06	91.47	10/6/2017 15:30
55	92357297007	25	60	140	98.08	94.68	91.29	10/6/2017 15:33

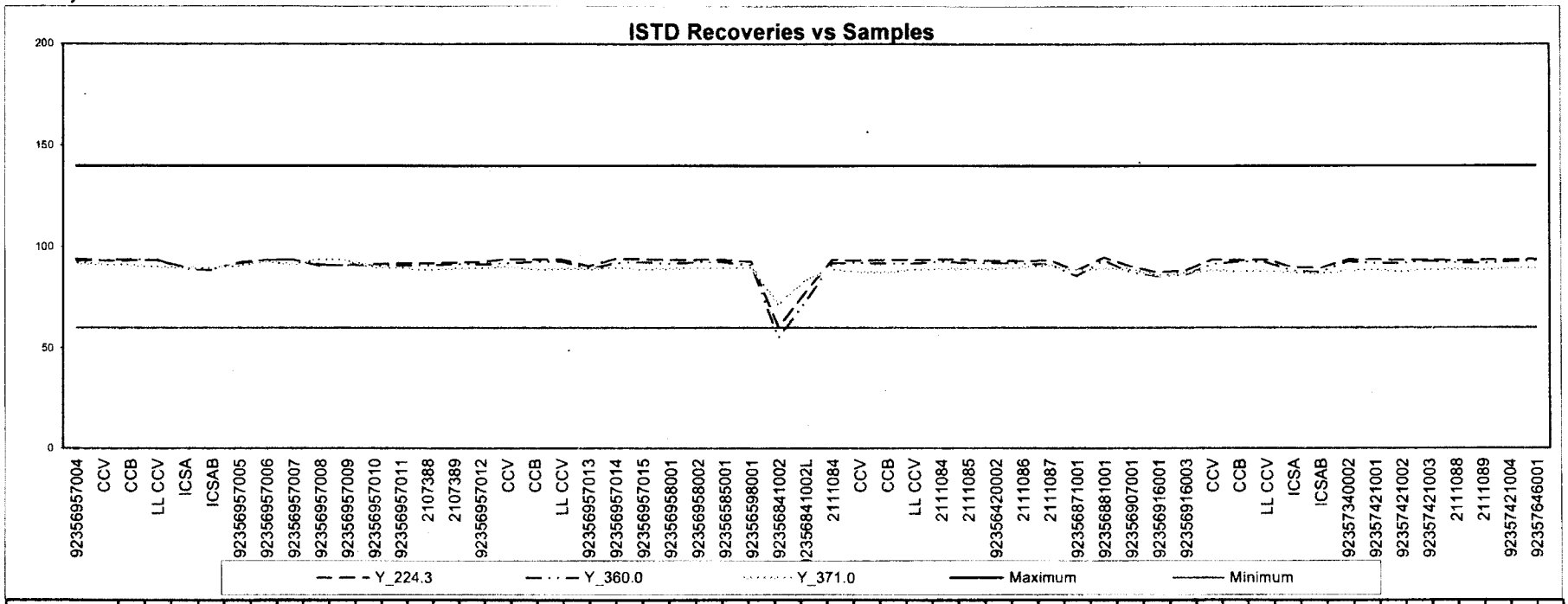


Analytical Run: 20171006.txt

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
56	CCV	1	60	140	99.08	95.2	91.69	10/6/2017 15:36
57	CCB	1	60	140	98.36	95.85	91.28	10/6/2017 15:39
58	LL CCV	1	60	140	99.48	96.48	91.24	10/6/2017 15:42
59	ICSA	1	60	140	98.55	91.71	87.71	10/6/2017 15:46
60	ICSAB	1	60	140	99.25	91.23	86.81	10/6/2017 15:49
61	92356893005	2	60	140	97.68	85.41	81.38	10/6/2017 15:52
62	92356893005	5	60	140	98.48	89.61	85.7	10/6/2017 15:55
63	92356893005	10	60	140	97.73	91.69	88.57	10/6/2017 15:58
64	92356893008	5	60	140	97.44	88.13	86.74	10/6/2017 16:02
65	92356893010	10	60	140	97.7	89.46	87.58	10/6/2017 16:05
66	92356893013	2	60	140	94.47	81.33	80.72	10/6/2017 16:08
67	92356893013	5	60	140	96.76	85.92	85.42	10/6/2017 16:12
68	92356893013	10	60	140	96.35	88.73	88.08	10/6/2017 16:15
69	92357132004	20	60	140	95.9	86.77	85.47	10/6/2017 16:18
70	92357132004	50	60	140	96.48	90.01	88.59	10/6/2017 16:22
71	CCV	1	60	140	97.16	95.47	93.26	10/6/2017 16:25
72	CCB	1	60	140	96.47	95.22	94.33	10/6/2017 16:28
73	LL CCV	1	60	140	95.24	95.16	94.67	10/6/2017 16:31
74	ICSA	1	60	140	94.63	90.88	90.32	10/6/2017 16:34
75	ICSAB	1	60	140	96.61	89.49	90.14	10/6/2017 16:37
76	2110928	1	60	140	95.36	89.01	89.7	10/6/2017 16:53
77	2110929	1	60	140	94.68	90.52	91.65	10/6/2017 16:56
78	92357274001	1	60	140	94.12	90.44	89.81	10/6/2017 16:59
79	2110930	1	60	140	93.62	90.02	89.74	10/6/2017 17:02
80	2110931	1	60	140	92.93	88.72	89.96	10/6/2017 17:05
81	92357381001	1	60	140	91	89.15	90.27	10/6/2017 17:09
82	92357381002	1	60	140	91.05	88.3	91.17	10/6/2017 17:12
83	92357427001	1	60	140	89.53	84.93	86.61	10/6/2017 17:15
84	92357269001	1	60	140	90.01	88.27	88.29	10/6/2017 17:18
85	92357500001	1	60	140	91.41	88.72	90.02	10/6/2017 17:22
86	CCV	1	60	140	91.06	90.92	93.17	10/6/2017 17:25
87	CCB	1	60	140	89.14	92.92	93.61	10/6/2017 17:28
88	LL CCV	1	60	140	89.99	93.18	93.87	10/6/2017 17:31
89	2105599	1	60	140	90.6	92.76	94.41	10/6/2017 17:34
90	2105600	1	60	140	90.91	93.12	94.37	10/6/2017 17:37
91	92356526001	1	60	140	90.76	94.22	94.48	10/6/2017 17:40
92	92356526002	1	60	140	91.68	93.98	94.84	10/6/2017 17:44
93	92356526003	1	60	140	91.94	93.25	94.82	10/6/2017 17:47
94	92356526004	1	60	140	90.17	93.62	94.35	10/6/2017 17:50
95	92356526005	1	60	140	90.16	92.86	93.75	10/6/2017 17:53
96	92356526006	1	60	140	90.04	93.06	93.7	10/6/2017 17:56
97	2105603	1	60	140	91.09	92.21	94.06	10/6/2017 17:59
98	2105604	1	60	140	90.8	92.31	93.8	10/6/2017 18:02
99	CCV	1	60	140	91.05	93.28	95.12	10/6/2017 18:05
100	CCB	1	60	140	90.23	93.62	93.82	10/6/2017 18:08
101	LL CCV	1	60	140	90.34	93.62	94.45	10/6/2017 18:11
102	92356526007	1	60	140	91.26	93.28	93.54	10/6/2017 18:15
103	92356526013	500	60	140	91.02	92.79	93.27	10/6/2017 18:18
104	2107384	1	60	140	92.72	92.88	93.15	10/6/2017 18:48
105	2107385	1	60	140	92.81	93.02	93.45	10/6/2017 18:51
106	92356957001	1	60	140	92.67	93.25	93.09	10/6/2017 18:54
107	2107386	1	60	140	92.54	93.69	93.05	10/6/2017 18:57
108	2107387	1	60	140	92.49	93.52	93	10/6/2017 19:00
109	92356957002	1	60	140	91.83	93.3	93.47	10/6/2017 19:03
110	92356957003	1	60	140	92.29	93.38	93.63	10/6/2017 19:06



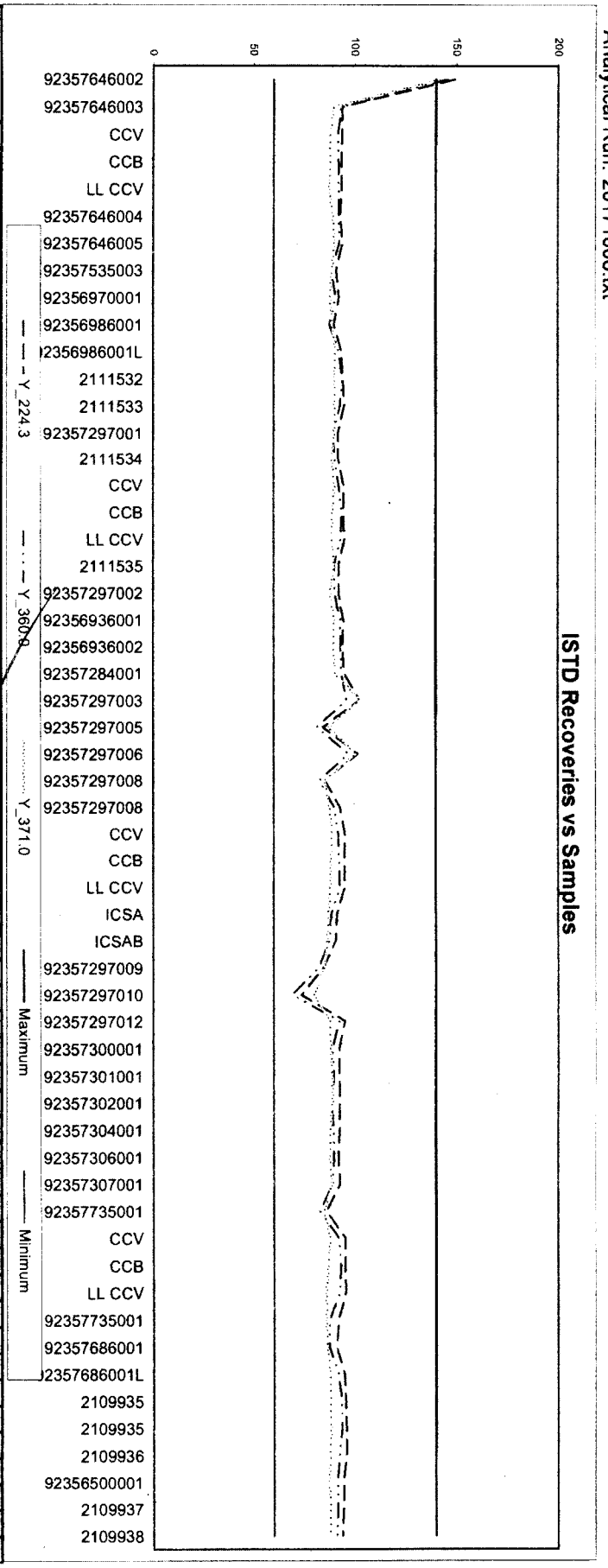
Analytical Run: 20171006.txt



Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
111	92356957004	1	60	140	92.14	94.27	93.42	10/6/2017 19:09
112	CCV	1	60	140	91.35	93.47	93.23	10/6/2017 19:12
113	CCB	1	60	140	91.04	94	93.39	10/6/2017 19:15
114	LL CCV	1	60	140	90.27	93.75	93.4	10/6/2017 19:18
115	ICSA	1	60	140	89.63	89.22	90.1	10/6/2017 19:22
116	ICSAB	1	60	140	89.58	88.63	89.21	10/6/2017 19:25
117	92356957005	1	60	140	90.66	92.37	92.08	10/6/2017 19:28
118	92356957006	1	60	140	92.84	93.7	93.53	10/6/2017 19:31
119	92356957007	1	60	140	91.47	93.6	93.57	10/6/2017 19:34
120	92356957008	1	60	140	94.04	91.28	90.57	10/6/2017 19:37
121	92356957009	1	60	140	93.4	90.98	91.15	10/6/2017 19:40
122	92356957010	1	60	140	89.85	90.86	91.42	10/6/2017 19:43
123	92356957011	20	60	140	89.62	90.88	92	10/6/2017 19:47
124	2107388	20	60	140	88.61	90.79	92.05	10/6/2017 19:50
125	2107389	20	60	140	89.32	91.73	92.24	10/6/2017 19:53
126	92356957012	1	60	140	89.63	91.29	92.63	10/6/2017 19:56
127	CCV	1	60	140	90.27	91.99	94.11	10/6/2017 19:59
128	CCB	1	60	140	89.05	92.69	93.67	10/6/2017 20:02
129	LL CCV	1	60	140	89.16	92.92	93.81	10/6/2017 20:05
130	92356957013	1	60	140	89.07	89.28	90.44	10/6/2017 20:08
131	92356957014	1	60	140	89.71	92.06	94.07	10/6/2017 20:12
132	92356957015	1	60	140	88.97	92.44	94.06	10/6/2017 20:15
133	92356958001	1	60	140	89.3	91.83	93.55	10/6/2017 20:18
134	92356958002	1	60	140	89.42	92.58	93.67	10/6/2017 20:21
135	92356585001	1	60	140	89.6	92.47	93.61	10/6/2017 20:24
136	92356598001	1	60	140	89.69	91.07	92.79	10/6/2017 20:27
137	92356841002	1	60	140	71.71	55.03	60.28	10/6/2017 20:31
138	92356841002L	5	60	140	63.6	73.07	77.97	10/6/2017 20:34
139	2111084	1	60	140	88.94	92.04	93.86	10/6/2017 20:37
140	CCV	1	60	140	87.46	92.14	93.43	10/6/2017 20:40
141	CCB	1	60	140	87.39	91.84	93.61	10/6/2017 20:43
142	LL CCV	1	60	140	88.73	91.84	93.46	10/6/2017 20:46
143	2111084	1	60	140	89.26	92.73	94.04	10/6/2017 20:50
144	2111085	1	60	140	89.17	92.07	93.67	10/6/2017 20:53
145	92356420002	1	60	140	89.1	92.09	93.17	10/6/2017 20:56
146	2111086	1	60	140	89.91	91.9	92.97	10/6/2017 20:59
147	2111087	1	60	140	91.03	91.35	93.55	10/6/2017 21:02
148	92356871001	1	60	140	88.35	85.77	88.34	10/6/2017 21:05
149	92356881001	1	60	140	89.32	93.39	94.72	10/6/2017 21:08
150	92356907001	1	60	140	88.96	87.59	90.45	10/6/2017 21:11
151	92356916001	1	60	140	85.89	85.61	87.51	10/6/2017 21:15
152	92356916003	1	60	140	87.27	86.2	88.55	10/6/2017 21:18
153	CCV	1	60	140	88.51	91.41	93.91	10/6/2017 21:21
154	CCB	1	60	140	88.04	92.72	93.55	10/6/2017 21:24
155	LL CCV	1	60	140	88.13	92.41	93.71	10/6/2017 21:27
156	ICSA	1	60	140	87.41	88.09	90.14	10/6/2017 21:30
157	ICSAB	1	60	140	86.81	87.52	89.52	10/6/2017 21:34
158	92357340002	1	60	140	88.22	92.71	93.66	10/6/2017 21:36
159	92357421001	1	60	140	88.68	91.9	93.75	10/6/2017 21:40
160	92357421002	1	60	140	87.85	92.05	93.41	10/6/2017 21:43
161	92357421003	1	60	140	88.72	93.13	93.73	10/6/2017 21:46
162	2111088	1	60	140	89.07	92.18	93.25	10/6/2017 21:49
163	2111089	1	60	140	88.82	92.07	93.46	10/6/2017 21:52
164	92357421004	1	60	140	89.46	92.7	93.66	10/6/2017 21:55
165	92357646001	1	60	140	89.33	93.32	94.05	10/6/2017 21:58

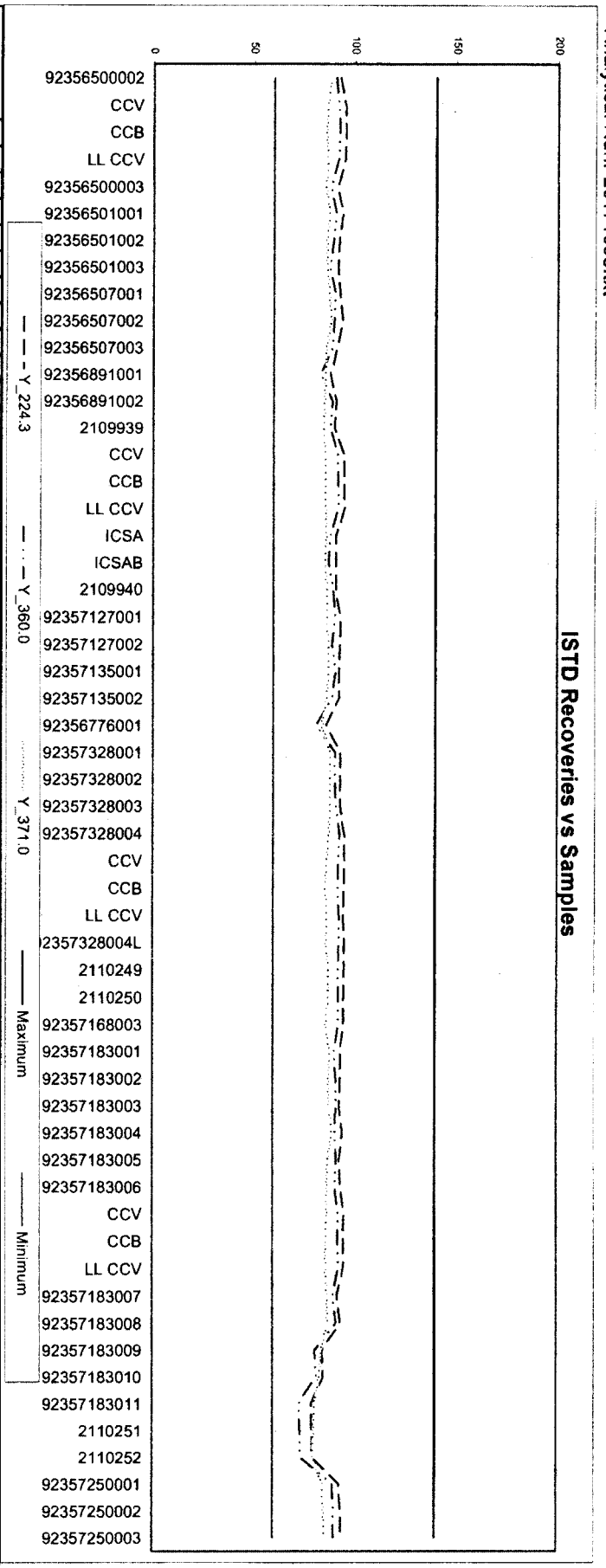
Analytical Run: 20171006.txt

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	DateTime
166	92357646002	1	60	140	141.8	145.7	149.3	10/6/2017 22:01
167	92357646003	1	60	140	89.63	93.36	93.82	10/6/2017 22:05
168	CCV	1	60	140	87.94	91.66	93.83	10/6/2017 22:08
169	CCB	1	60	140	87.87	92.09	93.42	10/6/2017 22:11
170	LL CCV	1	60	140	87.49	92.18	93.56	10/6/2017 22:14
171	92357646004	1	60	140	89.31	92.17	93.08	10/6/2017 22:17
172	92357646005	1	60	140	90.04	92.45	94.04	10/6/2017 22:20
173	92357535003	1	60	140	88.63	88.43	90.94	10/6/2017 22:24
174	92356970001	1	60	140	88.01	90.89	92.31	10/6/2017 22:27
175	92356986001	1	60	140	88.76	87.7	89.88	10/6/2017 22:30
176	92356986001L	5	60	140	90.6	92.25	93.65	10/6/2017 22:33
177	2111532	1	60	140	89.97	93.98	94.43	10/6/2017 22:36
178	2111533	1	60	140	90.14	92.77	94.93	10/6/2017 22:40
179	92357297001	1	60	140	90.1	89.6	91.99	10/6/2017 22:43
180	2111534	1	60	140	88.74	90.09	92.04	10/6/2017 22:46
181	CCV	1	60	140	90.22	92.29	94.71	10/6/2017 22:49
182	CCB	1	60	140	89.1	93.75	94.68	10/6/2017 22:52
183	LL CCV	1	60	140	88.86	93.19	95.09	10/6/2017 22:55
184	2111535	1	60	140	89.86	90.03	92.23	10/6/2017 22:58
185	92357297002	1	60	140	88.03	90.29	92.23	10/6/2017 23:01
186	92356936001	1	60	140	90.01	93.16	94.61	10/6/2017 23:04
187	92356936002	1	60	140	89.58	93.09	93.98	10/6/2017 23:07
188	92357284001	1	60	140	90.2	93.51	94.92	10/6/2017 23:10
189	92357297003	1	60	140	102.9	96.25	102.6	10/6/2017 23:14
190	92357297005	1	60	140	87.14	81.59	84.45	10/6/2017 23:17
191	92357297006	1	60	140	100.7	97.11	101.7	10/6/2017 23:20
192	92357297008	1	60	140	85.39	82.72	85.49	10/6/2017 23:23
193	92357297008	10	60	140	87.69	90.17	92.88	10/6/2017 23:27
194	CCV	1	60	140	88.99	92.09	95.33	10/6/2017 23:30
195	CCB	1	60	140	88.3	92.4	94.96	10/6/2017 23:33
196	LL CCV	1	60	140	88.18	93.07	95.32	10/6/2017 23:36
197	ICSA	1	60	140	87.15	88.76	91.51	10/6/2017 23:39
198	ICSAB	1	60	140	86.53	87.61	90.82	10/6/2017 23:43
199	92357297009	1	60	140	85.12	82.48	84.78	10/6/2017 23:46
200	92357297010	1	60	140	80.05	69.25	73.7	10/6/2017 23:49
201	92357297012	1	60	140	87.84	92.59	95.37	10/6/2017 23:52
202	92357300001	1	60	140	88.29	89.15	92.4	10/6/2017 23:56
203	92357301001	1	60	140	88.98	89.92	92.5	10/6/2017 23:59
204	92357302001	1	60	140	89.01	88.93	92.75	10/7/2017 0:02
205	92357304001	1	60	140	88.04	89.58	92.6	10/7/2017 0:05
206	92357306001	1	60	140	87.68	89.71	92.04	10/7/2017 0:08
207	92357307001	1	60	140	88.65	89.1	92.73	10/7/2017 0:11
208	92357735001	1	60	140	84.84	82.85	86.15	10/7/2017 0:15
209	CCV	1	60	140	87.85	92.35	95.43	10/7/2017 0:18
210	CCB	1	60	140	87.05	93.17	95.29	10/7/2017 0:21
211	LL CCV	1	60	140	85.87	92.65	95.6	10/7/2017 0:24
212	92357735001	5	60	140	85.82	87.65	92.24	10/7/2017 0:27
213	92357686001	1	60	140	86.61	87.49	91.05	10/7/2017 0:30
214	92357686001L	5	60	140	87.85	92.08	94.86	10/7/2017 0:34
215	2109935	1	60	140	88.01	93.42	95.46	10/7/2017 0:37
216	2109935	1	60	140	88.32	93.6	95.9	10/7/2017 0:40
217	2109936	1	60	140	87.93	92.51	95.84	10/7/2017 0:43
218	92356500001	1	60	140	87.35	91.47	94.45	10/7/2017 0:46
219	2109937	1	60	140	88.02	91.56	94.54	10/7/2017 0:49
220	2109938	1	60	140	87.74	91.19	93.95	10/7/2017 0:52



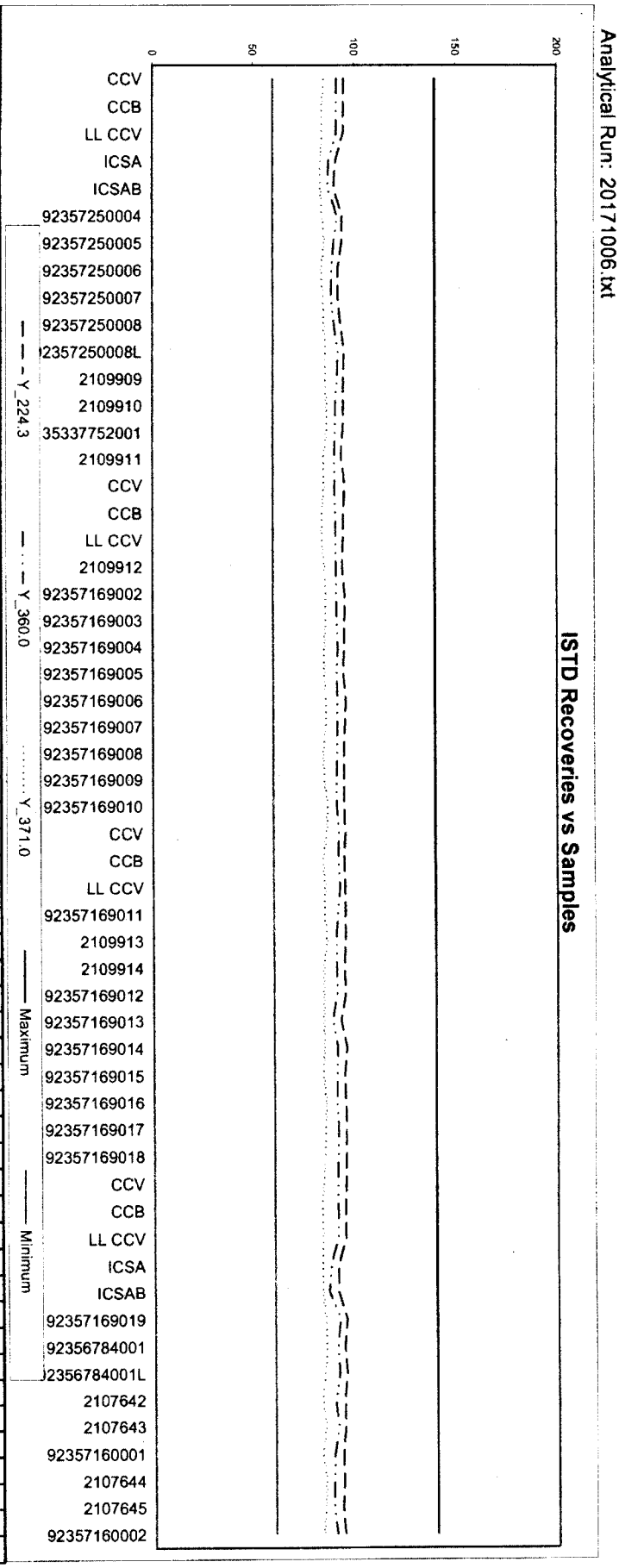
Analytical Run: 20171006.txt

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
221	92356500002	1	60	140	88.24	90.58	92.86	10/7/2017 0:55
222	CCV	1	60	140	86.78	92.13	95.33	10/7/2017 0:58
223	CCB	1	60	140	86.04	92.55	95.64	10/7/2017 1:01
224	LL CCV	1	60	140	86.77	92.13	95.25	10/7/2017 1:04
225	92356500003	1	60	140	85.79	88.32	91.61	10/7/2017 1:08
226	92356501001	1	60	140	87.69	90.84	94.12	10/7/2017 1:11
227	92356501002	1	60	140	86.26	89.47	92.43	10/7/2017 1:14
228	92356501003	1	60	140	86.43	87.86	91.7	10/7/2017 1:17
229	92356507001	1	60	140	87.43	90.53	92.76	10/7/2017 1:20
230	92356507002	1	60	140	88.54	89.97	94.11	10/7/2017 1:23
231	92356507003	1	60	140	86.15	89.19	91.64	10/7/2017 1:26
232	92356891001	1	60	140	85.67	83.3	88.17	10/7/2017 1:29
233	92356891002	1	60	140	85.19	89.16	91.13	10/7/2017 1:33
234	2109939	1	60	140	84.94	88.23	90.17	10/7/2017 1:36
235	CCV	1	60	140	85.49	91.72	94.87	10/7/2017 1:39
236	CCB	1	60	140	85.79	92.08	94.9	10/7/2017 1:42
237	LL CCV	1	60	140	85.91	92.3	95.14	10/7/2017 1:45
238	ICSA	1	60	140	86.18	88.23	91	10/7/2017 1:48
239	ICSAB	1	60	140	85.45	87.39	90.92	10/7/2017 1:51
240	2109940	1	60	140	86.78	89.65	90.86	10/7/2017 1:54
241	92357127001	1	60	140	86.44	90.6	93.01	10/7/2017 1:57
242	92357127002	1	60	140	87.19	89.2	93.11	10/7/2017 2:00
243	92357135001	1	60	140	87.48	90.9	92.55	10/7/2017 2:04
244	92357135002	1	60	140	86.45	89.19	92.52	10/7/2017 2:07
245	92356776001	1	60	140	84.19	81.41	86.23	10/7/2017 2:10
246	92357328001	1	60	140	88.48	90.7	93.43	10/7/2017 2:13
247	92357328002	1	60	140	88.19	90.57	93.19	10/7/2017 2:16
248	92357328003	1	60	140	88.22	91.19	93.26	10/7/2017 2:19
249	92357328004	1	60	140	87.66	92.97	95.41	10/7/2017 2:22
250	CCV	1	60	140	86.54	92.47	95.55	10/7/2017 2:26
251	CCB	1	60	140	85.91	92.18	95.18	10/7/2017 2:29
252	LL CCV	1	60	140	86.74	92.67	94.76	10/7/2017 2:32
253	92357328004L	5	60	140	86.2	92.71	95.23	10/7/2017 2:35
254	2110249	1	60	140	87.48	92.28	95.12	10/7/2017 2:38
255	2110250	1	60	140	87.58	92.3	95	10/7/2017 2:41
256	92357168003	1	60	140	86.07	92.49	94.86	10/7/2017 2:44
257	92357183001	1	60	140	88.07	90.41	93.38	10/7/2017 2:47
258	92357183002	1	60	140	87.71	91.23	93.48	10/7/2017 2:51
259	92357183003	1	60	140	87.86	91.48	92.83	10/7/2017 2:54
260	92357183004	1	60	140	89.4	90.75	94.47	10/7/2017 2:57
261	92357183005	1	60	140	87.26	91.42	92.99	10/7/2017 3:00
262	92357183006	1	60	140	86.84	90.76	93.71	10/7/2017 3:03
263	CCV	1	60	140	86.88	92.63	95.27	10/7/2017 3:06
264	CCB	1	60	140	86.32	92.31	94.98	10/7/2017 3:09
265	LL CCV	1	60	140	86.21	92.68	95	10/7/2017 3:13
266	92357183007	1	60	140	86.92	89.94	91.84	10/7/2017 3:16
267	92357183008	1	60	140	87.22	91.44	93.66	10/7/2017 3:19
268	92357183009	1	60	140	84.24	80.96	84.71	10/7/2017 3:22
269	92357183010	1	60	140	83.19	81.87	85.16	10/7/2017 3:25
270	92357183011	1	60	140	80.82	73.2	79.31	10/7/2017 3:29
271	2110251	1	60	140	80.36	73.73	79.58	10/7/2017 3:32
272	2110252	1	60	140	79.71	74.02	79.66	10/7/2017 3:35
273	92357250001	1	60	140	84.83	89.68	92.8	10/7/2017 3:38
274	92357250002	1	60	140	85.33	90.37	93.82	10/7/2017 3:41
275	92357250003	1	60	140	85.77	90.26	93.87	10/7/2017 3:44

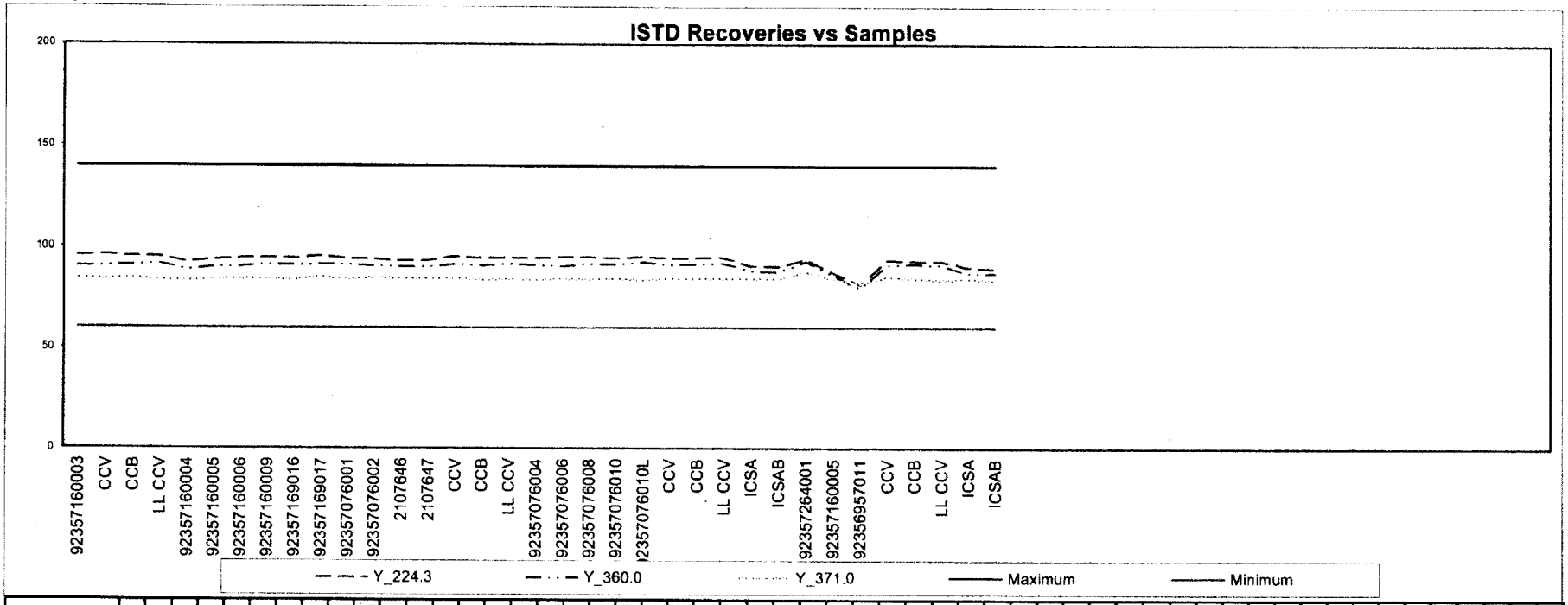


Analytical Run: 20171006.txt

Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
276	CCV	1	60	140	85.27	91.66	95.05	10/7/2017 3:47
277	CCB	1	60	140	84.34	91.54	95.05	10/7/2017 3:50
278	LL CCV	1	60	140	84.55	91.63	94.89	10/7/2017 3:54
279	ICSA	1	60	140	83.8	87.7	91.13	10/7/2017 3:57
280	ICSAB	1	60	140	83.75	87.32	90.41	10/7/2017 4:00
281	92357250004	1	60	140	84.64	92.06	94.49	10/7/2017 4:03
282	92357250005	1	60	140	85.79	90.3	94.18	10/7/2017 4:06
283	92357250006	1	60	140	84.09	89.36	92.36	10/7/2017 4:09
284	92357250007	1	60	140	84.91	88.94	92.35	10/7/2017 4:12
285	92357250008	1	60	140	85.28	90.36	93.73	10/7/2017 4:15
286	92357250008L	5	60	140	86.14	92.29	95.53	10/7/2017 4:19
287	2109909	1	60	140	85.93	92.03	94.89	10/7/2017 4:22
288	2109910	1	60	140	86.68	91.07	95.09	10/7/2017 4:25
289	35337752001	1	60	140	86.57	91	94.8	10/7/2017 4:28
290	2109911	1	60	140	85.12	90.67	93.96	10/7/2017 4:31
291	CCV	1	60	140	85.36	90.69	95.7	10/7/2017 4:34
292	CCB	1	60	140	84.44	90.96	95.02	10/7/2017 4:37
293	LL CCV	1	60	140	84.13	91.27	94.72	10/7/2017 4:40
294	2109912	1	60	140	85.65	91.13	94.43	10/7/2017 4:43
295	92357169002	1	60	140	85.96	91.53	95.5	10/7/2017 4:46
296	92357169003	1	60	140	85.95	91.76	95.44	10/7/2017 4:49
297	92357169004	1	60	140	85.51	92.02	95.17	10/7/2017 4:53
298	92357169005	1	60	140	85.28	91.55	94.64	10/7/2017 4:56
299	92357169006	1	60	140	85.98	91.81	95.86	10/7/2017 4:59
300	92357169007	1	60	140	85.96	91.65	95.4	10/7/2017 5:02
301	92357169008	1	60	140	84.67	91.77	94.9	10/7/2017 5:05
302	92357169009	1	60	140	85.24	91.36	94.87	10/7/2017 5:08
303	92357169010	1	60	140	86.78	91.52	95.16	10/7/2017 5:12
304	CCV	1	60	140	86.36	92.51	95.73	10/7/2017 5:15
305	CCB	1	60	140	84.52	92.2	94.93	10/7/2017 5:18
306	LL CCV	1	60	140	85.35	92.87	95.48	10/7/2017 5:21
307	92357169011	1	60	140	84.98	91.72	95.22	10/7/2017 5:24
308	2109913	1	60	140	86.42	90.89	95.23	10/7/2017 5:27
309	2109914	1	60	140	84.69	91	94.9	10/7/2017 5:30
310	92357169012	1	60	140	84.73	91.4	95.26	10/7/2017 5:33
311	92357169013	1	60	140	84.65	89.06	93.02	10/7/2017 5:36
312	92357169014	1	60	140	84.88	91.5	96.04	10/7/2017 5:39
313	92357169015	1	60	140	84.29	91.17	94.86	10/7/2017 5:42
314	92357169016	1	60	140	85.72	90.99	95.43	10/7/2017 5:46
315	92357169017	1	60	140	85.31	91.7	95.44	10/7/2017 5:49
316	92357169018	1	60	140	84.89	91.51	95.57	10/7/2017 5:52
317	CCV	1	60	140	84.24	91.09	95.23	10/7/2017 5:55
318	CCB	1	60	140	83.42	91.35	94.98	10/7/2017 5:58
319	LL CCV	1	60	140	84	91.37	95.19	10/7/2017 6:01
320	ICSA	1	60	140	83.58	87.88	91.52	10/7/2017 6:04
321	ICSAB	1	60	140	83.76	86.75	91.4	10/7/2017 6:08
322	92357169019	1	60	140	84.8	92.14	95.52	10/7/2017 6:11
323	92356784001	1	60	140	85.54	90.89	94.33	10/7/2017 6:14
324	92356784001L	5	60	140	84.71	91.77	95.57	10/7/2017 6:17
325	2107642	1	60	140	83.29	89.83	94.35	10/7/2017 6:20
326	2107643	1	60	140	84.94	91.3	94.62	10/7/2017 6:23
327	92357160001	1	60	140	83.22	89.34	93.49	10/7/2017 6:26
328	2107644	1	60	140	84.86	89.09	93.84	10/7/2017 6:29
329	2107645	1	60	140	84.7	88.66	93.18	10/7/2017 6:32
330	92357160002	1	60	140	83.69	90.34	94.26	10/7/2017 6:35



Analytical Run: 20171006.txt



Run Number	Analysis ID	Dilution	Minimum	Maximum	Y_371.0	Y_360.0	Y_224.3	Date/Time
331	92357160003	1	60	140	84.62	90.42	95.51	10/7/2017 6:38
332	CCV	1	60	140	84.02	90.69	96.16	10/7/2017 6:42
333	CCB	1	60	140	84.81	90.94	95.31	10/7/2017 6:44
334	LL CCV	1	60	140	83.57	91.73	95.19	10/7/2017 6:48
335	92357160004	1	60	140	83.52	88.76	92.57	10/7/2017 6:51
336	92357160005	5	60	140	84.04	90.07	93.79	10/7/2017 6:54
337	92357160006	1	60	140	84.07	90.23	94.53	10/7/2017 6:57
338	92357160009	1	60	140	84.15	91.3	94.76	10/7/2017 7:00
339	92357169016	1	60	140	83.57	91.01	94.43	10/7/2017 7:03
340	92357169017	1	60	140	85.25	91.46	95.51	10/7/2017 7:07
341	92357076001	1	60	140	83.84	91.26	94.28	10/7/2017 7:10
342	92357076002	1	60	140	84.78	90.65	94.01	10/7/2017 7:13
343	2107646	1	60	140	84.33	90.21	93.09	10/7/2017 7:16
344	2107647	1	60	140	84.02	89.99	93.18	10/7/2017 7:19
345	CCV	1	60	140	84.68	91.54	95.24	10/7/2017 7:22
346	CCB	1	60	140	83.7	90.72	94.46	10/7/2017 7:25
347	LL CCV	1	60	140	84.05	91.72	94.83	10/7/2017 7:28
348	92357076004	1	60	140	83.76	91.02	94.41	10/7/2017 7:31
349	92357076006	1	60	140	84.1	90.43	95.08	10/7/2017 7:35
350	92357076008	1	60	140	83.99	91.71	94.97	10/7/2017 7:38
351	92357076010	1	60	140	84.33	91.44	94.58	10/7/2017 7:41
352	92357076010L	5	60	140	83.72	92.58	95.25	10/7/2017 7:44
353	CCV	1	60	140	84.52	91.14	94.54	10/7/2017 7:47
354	CCB	1	60	140	84.15	91.64	94.65	10/7/2017 7:50
355	LL CCV	1	60	140	84.28	92.06	94.86	10/7/2017 7:53
356	ICSA	1	60	140	84.37	88.13	90.64	10/7/2017 7:57
357	ICSAB	1	60	140	84.02	87.76	90.56	10/7/2017 8:00
358	92357264001	10	60	140	88.01	92.97	94.06	10/7/2017 8:47
359	92357160005	1	60	140	84	86.13	87.49	10/7/2017 8:50
360	92356957011	1	60	140	81.9	79.73	81.41	10/7/2017 8:53
361	CCV	1	60	140	85.14	91.18	93.61	10/7/2017 8:57
362	CCB	1	60	140	84.47	91.6	93.05	10/7/2017 9:00
363	LL CCV	1	60	140	83.66	91.14	92.96	10/7/2017 9:03
364	ICSA	1	60	140	84.31	87.24	90.26	10/7/2017 9:06
365	ICSAB	1	60	140	83.43	87	89.38	10/7/2017 9:09

Metals Batch Summary Form

Method: Total Metals by 3010A/6010D

MPRP/MERP Batch: 27821
ICP/ICPM/MERC Batch: 23891
Initial ICP Run Date: 10/6/17

All QC is acceptable unless noted below

Complete and Ready for Validation: [illegible]

Circle Initial Instrument: 92ICP3 92ICP4 92ICM2 92ICM3 HG4 HG1

Sample #:	Instrument Issue	LCS	MB	Internal Std	CCV	LLCCV	CCB	Dilations	Rerun Date	Rerun Instrument	Comment
2111532											
2111533											
92357297001							90	Na - 5x	10/7	3	
2111534							2-1	⊥	⊥	⊥	
2111535							2	⊥	⊥	⊥	
92357297002							3	Na - 5x	⊥	⊥	
92356936001											
92356936002											
92357284001											
92357297003							4/5	Na-50x & K-5x	10/7	3	
92357297005							6/7	Na-50x & Ca, K Mn-5x	⊥	⊥	
92357297006							8	Na -10x	⊥	⊥	
92357297008								10x	10/6	3	
92357297009							9/10	Na-10x & K, Ca 5x	10/7	3	
92357297010							11/12	Na-50x & Ca, K 10x	⊥	⊥	
92357297012											
92357300001											
92357301001											
92357302001											
92357304001											
92357306001											
92357307001											
92357735001											
92357686001											

Carolina Benchsheet Version 7.1

Pace Analytical

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

ICP Spike Solution Ref. #:	25995	0.15 mL used	**Test: ICP**
race Grade Nitric Acid Ref. #:	16212	0.30 mL used	
Trace Grade HCL Acid Ref. #:	16343	0.75mL used	Method: Total Metals / Spike Witness: KA
Analyst:	KLB	(Circle) Pipette ID Used: 9A 37 53 57 90 Other: 100	
Date Digested:	10/5/17	Thermometer ID or Serial Number: MT3	
Matrix:	Water	Time In: 2135	Time Out: 0135
Batch#:	MPRP27821	HotBlock Used: 5	
Tube SS #/Filter SS#:	—	HotBlock Temp°C 93 (90-95 °C)	
Digestion Cup ID #	16373	Centrifuged: Yes / No	
Circle Balanced Used :	#1 or #6	Balance: ID: #1 Mettler PE 400 SN:B29715 ID: #6 Mettler PJ 300, SN 111088	

* If any samples are filtered, MB and LCS must also be filtered

Sample Number	Sample I.D.	WT Sample VL is always 15 mL unless otherwise noted.	Final Volume is always 15 mL unless otherwise noted.	Samples Not Filtered unless a Y is noted*	Analyst Initials / Date Filtered
2111532	BLANK for HBN 381042 (MPRP/278				
2111533	LCS for HBN 381042 (MPRP/27821				
92357297001	TMW2-2				
2111534	TMW2-2(2107037MS)				
2111535	TMW2-2(2107037MSD)				
92357297002	TMW2-3				
92356936001	OFFICE				
92356936002	SCALE HOUSE				
92357284001	TW-11				
92357297003	TMW2-4				
92357297005	TMW2-9				
92357297006	TMW2-1				
92357297008	DUP-1				
92357297009	TMW-2-5				
92357297010	TMW-2-7				
92357297012	Rinse Blank				
92357300001	EFFLUENT				
92357301001	EFFLUENT				
92357302001	EFFLUENT				
92357304001	EFFLUENT				
92357306001	EFFLUENT				
92357307001	EFFLUENT				
92357735001	Drain A				
92357686001	17-2075-1 Effluent WW Comp				
	KB	10/5/17			

Carolina Benchsheet Version 7.1

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	12:41:40	S0	1		
10/6/2017	12:44:52	S1	1		
10/6/2017	12:48:04	S2	1		
10/6/2017	12:51:00	S3	1		
10/6/2017	12:53:54	ICV	1		
10/6/2017	12:56:50	ICB	1		
10/6/2017	13:00:02	LL CCV	1		
10/6/2017	13:03:15	ICSA	1		
10/6/2017	13:06:25	ICSAB	1		
10/6/2017	13:12:36	ICV	1		
10/6/2017	13:16:24	S0	1		
10/6/2017	13:19:36	S1	1		
10/6/2017	13:22:48	S2	1		
10/6/2017	13:25:44	S3	1		
10/6/2017	13:28:38	ICV	1		
10/6/2017	13:31:35	ICB	1		
10/6/2017	13:34:47	LL CCV	1		
10/6/2017	13:37:59	ICSA	1		
10/6/2017	13:41:09	ICSAB	1		
10/6/2017	13:44:05	100 PPB	1		
10/6/2017	13:47:14	2112026	1		23886
10/6/2017	13:50:27	2112026	1		23886
10/6/2017	13:53:39	2112027	1		23886
10/6/2017	13:56:34	92356347001	1		23886
10/6/2017	13:59:47	2112028	1		23886
10/6/2017	14:02:50	2112029	1		23886
10/6/2017	14:05:53	92357294001	1		23886
10/6/2017	14:08:56	92356347001L	5		23886
10/6/2017	14:12:01	2109122	1		23864
10/6/2017	14:15:14	CCV	1		
10/6/2017	14:18:09	CCB	1		
10/6/2017	14:21:21	LL CCV	1		
10/6/2017	14:24:33	2109123	1		23864
10/6/2017	14:27:29	92356757001	1		23864
10/6/2017	14:30:35	92356757002	1		23864
10/6/2017	14:33:42	35337453001	1		23864
10/6/2017	14:36:50	92357064002	1		23864
10/6/2017	14:39:50	92357064003	1		23864
10/6/2017	14:42:59	92357338001	1		23864
10/6/2017	14:46:16	92357338002	1		23864
10/6/2017	14:49:33	92357470001	1		23864
10/6/2017	14:52:43	92357470002	1		23864
10/6/2017	14:55:53	CCV	1		
10/6/2017	14:58:49	CCB	1		
10/6/2017	15:02:00	LL CCV	1		
10/6/2017	15:05:13	92357470004	1		23864

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	15:08:22	92357132006	2		23867
10/6/2017	15:11:30	92357132006	5		23867
10/6/2017	15:14:38	92357132006	10		23867
10/6/2017	15:17:49	92356750016	5		23788
10/6/2017	15:20:57	92356752004	5		23788
10/6/2017	15:24:05	2110825	1		23879
10/6/2017	15:27:16	92356535015	5		23879
10/6/2017	15:30:23	92357297004	25		23838
10/6/2017	15:33:35	92357297007	25		23838
10/6/2017	15:36:47	CCV	1		
10/6/2017	15:39:43	CCB	1		
10/6/2017	15:42:54	LL CCV	1		
10/6/2017	15:46:06	ICSA	1		
10/6/2017	15:49:16	ICSAB	1		
10/6/2017	15:52:13	92356893005	2		23860
10/6/2017	15:55:32	92356893005	5		23860
10/6/2017	15:58:50	92356893005	10		23860
10/6/2017	16:02:08	92356893008	5		23860
10/6/2017	16:05:27	92356893010	10		23860
10/6/2017	16:08:45	92356893013	2		23860
10/6/2017	16:12:03	92356893013	5		23860
10/6/2017	16:15:20	92356893013	10		23860
10/6/2017	16:18:39	92357132004	20		23860
10/6/2017	16:22:00	92357132004	50		23860
10/6/2017	16:25:21	CCV	1		
10/6/2017	16:28:18	CCB	1		
10/6/2017	16:31:30	LL CCV	1		
10/6/2017	16:34:42	ICSA	1		
10/6/2017	16:37:52	ICSAB	1		
10/6/2017	16:53:15	2110928	1		23872
10/6/2017	16:56:34	2110929	1		23872
10/6/2017	16:59:38	92357274001	1		23872
10/6/2017	17:02:55	2110930	1		23872
10/6/2017	17:05:59	2110931	1		23872
10/6/2017	17:09:03	92357381001	1		23872
10/6/2017	17:12:20	92357381002	1		23872
10/6/2017	17:15:36	92357427001	1		23872
10/6/2017	17:18:54	92357269001	1		23872
10/6/2017	17:22:04	92357500001	1		23872
10/6/2017	17:25:24	CCV	1		
10/6/2017	17:28:20	CCB	1		
10/6/2017	17:31:32	LL CCV	1		
10/6/2017	17:34:44	2105599	1		23810
10/6/2017	17:37:56	2105600	1		23810
10/6/2017	17:40:52	92356526001	1		23810
10/6/2017	17:44:04	92356526002	1		23810
10/6/2017	17:47:15	92356526003	1		23810
10/6/2017	17:50:26	92356526004	1		23810
10/6/2017	17:53:38	92356526005	1		23810

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	17:56:49	92356526006	1		23810
10/6/2017	17:59:59	2105603	1		23810
10/6/2017	18:02:55	2105604	1		23810
10/6/2017	18:05:51	CCV	1		
10/6/2017	18:08:47	CCB	1		
10/6/2017	18:11:58	LL CCV	1		
10/6/2017	18:15:11	92356526007	1		23810
10/6/2017	18:18:22	92356526013	500		23810
10/6/2017	18:48:14	2107384	1		23844
10/6/2017	18:51:26	2107385	1		23844
10/6/2017	18:54:22	92356957001	1		23844
10/6/2017	18:57:31	2107386	1		23844
10/6/2017	19:00:26	2107387	1		23844
10/6/2017	19:03:21	92356957002	1		23844
10/6/2017	19:06:30	92356957003	1		23844
10/6/2017	19:09:38	92356957004	1		23844
10/6/2017	19:12:51	CCV	1		
10/6/2017	19:15:47	CCB	1		
10/6/2017	19:18:59	LL CCV	1		
10/6/2017	19:22:10	ICSA	1		
10/6/2017	19:25:20	ICSAB	1		
10/6/2017	19:28:17	92356957005	1		23844
10/6/2017	19:31:25	92356957006	1		23844
10/6/2017	19:34:34	92356957007	1		23844
10/6/2017	19:37:45	92356957008	1		23844
10/6/2017	19:40:51	92356957009	1		23844
10/6/2017	19:43:58	92356957010	1		23844
10/6/2017	19:47:05	92356957011	20		23844
10/6/2017	19:50:14	2107388	20		23844
10/6/2017	19:53:21	2107389	20		23844
10/6/2017	19:56:29	92356957012	1		23844
10/6/2017	19:59:39	CCV	1		
10/6/2017	20:02:34	CCB	1		
10/6/2017	20:05:46	LL CCV	1		
10/6/2017	20:08:58	92356957013	1		23844
10/6/2017	20:12:05	92356957014	1		23844
10/6/2017	20:15:17	92356957015	1		23844
10/6/2017	20:18:29	92356958001	1		23844
10/6/2017	20:21:38	92356958002	1		23844
10/6/2017	20:24:47	92356585001	1		23844
10/6/2017	20:27:57	92356598001	1		23844
10/6/2017	20:31:06	92356841002	1		23844
10/6/2017	20:34:20	92356841002L	5		23844
10/6/2017	20:37:36	2111084	1		23883
10/6/2017	20:40:49	CCV	1		
10/6/2017	20:43:45	CCB	1		
10/6/2017	20:46:57	LL CCV	1		
10/6/2017	20:50:11	2111084	1		23883
10/6/2017	20:53:24	2111085	1		23883

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	20:56:20	92356420002	1		23883
10/6/2017	20:59:31	2111086	1		23883
10/6/2017	21:02:27	2111087	1		23883
10/6/2017	21:05:23	92356871001	1		23883
10/6/2017	21:08:41	92356881001	1		23883
10/6/2017	21:11:51	92356907001	1		23883
10/6/2017	21:15:02	92356916001	1		23883
10/6/2017	21:18:16	92356916003	1		23883
10/6/2017	21:21:32	CCV	1		
10/6/2017	21:24:28	CCB	1		
10/6/2017	21:27:40	LL CCV	1		
10/6/2017	21:30:52	ICSA	1		
10/6/2017	21:34:01	ICSAB	1		
10/6/2017	21:36:59	92357340002	1		23883
10/6/2017	21:40:11	92357421001	1		23883
10/6/2017	21:43:22	92357421002	1		23883
10/6/2017	21:46:33	92357421003	1		23883
10/6/2017	21:49:45	2111088	1		23883
10/6/2017	21:52:41	2111089	1		23883
10/6/2017	21:55:37	92357421004	1		23883
10/6/2017	21:58:49	92357646001	1		23883
10/6/2017	22:01:59	92357646002	1		23883
10/6/2017	22:05:06	92357646003	1		23883
10/6/2017	22:08:19	CCV	1		
10/6/2017	22:11:14	CCB	1		
10/6/2017	22:14:26	LL CCV	1		
10/6/2017	22:17:39	92357646004	1		23883
10/6/2017	22:20:56	92357646005	1		23883
10/6/2017	22:24:08	92357535003	1		23883
10/6/2017	22:27:18	92356970001	1		23883
10/6/2017	22:30:27	92356986001	1		23883
10/6/2017	22:33:43	92356986001L	5		23883
10/6/2017	22:36:55	2111532	1		23891
10/6/2017	22:40:07	2111533	1		23891
10/6/2017	22:43:03	92357297001	1		23891
10/6/2017	22:46:12	2111534	1		23891
10/6/2017	22:49:09	CCV	1		
10/6/2017	22:52:05	CCB	1		
10/6/2017	22:55:17	LL CCV	1		
10/6/2017	22:58:29	2111535	1		23891
10/6/2017	23:01:25	92357297002	1		23891
10/6/2017	23:04:34	92356936001	1		23891
10/6/2017	23:07:42	92356936002	1		23891
10/6/2017	23:10:51	92357284001	1		23891
10/6/2017	23:14:00	92357297003	1		23891
10/6/2017	23:17:15	92357297005	1		23891
10/6/2017	23:20:40	92357297006	1		23891
10/6/2017	23:23:57	92357297008	1		23891
10/6/2017	23:27:22	92357297008	10		23891

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/6/2017	23:30:34	CCV	1		
10/6/2017	23:33:30	CCB	1		
10/6/2017	23:36:42	LL CCV	1		
10/6/2017	23:39:54	ICSA	1		
10/6/2017	23:43:04	ICSAB	1		
10/6/2017	23:46:01	92357297009	1		23891
10/6/2017	23:49:27	92357297010	1		23891
10/6/2017	23:52:52	92357297012	1		23891
10/6/2017	23:56:04	92357300001	1		23891
10/6/2017	23:59:13	92357301001	1		23891
10/7/2017	0:02:23	92357302001	1		23891
10/7/2017	0:05:32	92357304001	1		23891
10/7/2017	0:08:43	92357306001	1		23891
10/7/2017	0:11:52	92357307001	1		23891
10/7/2017	0:15:02	92357735001	1		23891
10/7/2017	0:18:20	CCV	1		
10/7/2017	0:21:16	CCB	1		
10/7/2017	0:24:27	LL CCV	1		
10/7/2017	0:27:41	92357735001	5		23891
10/7/2017	0:30:50	92357686001	1		23891
10/7/2017	0:34:00	92357686001L	5		23891
10/7/2017	0:37:10	2109935	1		23868
10/7/2017	0:40:23	2109935	1		23868
10/7/2017	0:43:35	2109936	1		23868
10/7/2017	0:46:32	92356500001	1		23868
10/7/2017	0:49:39	2109937	1		23868
10/7/2017	0:52:34	2109938	1		23868
10/7/2017	0:55:28	92356500002	1		23868
10/7/2017	0:58:40	CCV	1		
10/7/2017	1:01:36	CCB	1		
10/7/2017	1:04:48	LL CCV	1		
10/7/2017	1:08:02	92356500003	1		23868
10/7/2017	1:11:10	92356501001	1		23868
10/7/2017	1:14:17	92356501002	1		23868
10/7/2017	1:17:26	92356501003	1		23868
10/7/2017	1:20:34	92356507001	1		23868
10/7/2017	1:23:40	92356507002	1		23868
10/7/2017	1:26:48	92356507003	1		23868
10/7/2017	1:29:57	92356891001	1		23868
10/7/2017	1:33:18	92356891002	1		23868
10/7/2017	1:36:28	2109939	1		23868
10/7/2017	1:39:24	CCV	1		
10/7/2017	1:42:21	CCB	1		
10/7/2017	1:45:32	LL CCV	1		
10/7/2017	1:48:44	ICSA	1		
10/7/2017	1:51:54	ICSAB	1		
10/7/2017	1:54:51	2109940	1		23868
10/7/2017	1:57:46	92357127001	1		23868
10/7/2017	2:00:55	92357127002	1		23868

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/7/2017	2:04:03	92357135001	1		23868
10/7/2017	2:07:12	92357135002	1		23868
10/7/2017	2:10:22	92356776001	1		23868
10/7/2017	2:13:37	92357328001	1		23868
10/7/2017	2:16:43	92357328002	1		23868
10/7/2017	2:19:49	92357328003	1		23868
10/7/2017	2:22:55	92357328004	1		23868
10/7/2017	2:26:08	CCV	1		
10/7/2017	2:29:04	CCB	1		
10/7/2017	2:32:15	LL CCV	1		
10/7/2017	2:35:28	92357328004L	5		23868
10/7/2017	2:38:40	2110249	1		23876
10/7/2017	2:41:52	2110250	1		23876
10/7/2017	2:44:47	92357168003	1		23876
10/7/2017	2:47:59	92357183001	1		23876
10/7/2017	2:51:08	92357183002	1		23876
10/7/2017	2:54:17	92357183003	1		23876
10/7/2017	2:57:25	92357183004	1		23876
10/7/2017	3:00:33	92357183005	1		23876
10/7/2017	3:03:41	92357183006	1		23876
10/7/2017	3:06:53	CCV	1		
10/7/2017	3:09:48	CCB	1		
10/7/2017	3:13:00	LL CCV	1		
10/7/2017	3:16:14	92357183007	1		23876
10/7/2017	3:19:22	92357183008	1		23876
10/7/2017	3:22:32	92357183009	1		23876
10/7/2017	3:25:48	92357183010	1		23876
10/7/2017	3:29:04	92357183011	1		23876
10/7/2017	3:32:21	2110251	1		23876
10/7/2017	3:35:26	2110252	1		23876
10/7/2017	3:38:31	92357250001	1		23876
10/7/2017	3:41:38	92357250002	1		23876
10/7/2017	3:44:45	92357250003	1		23876
10/7/2017	3:47:53	CCV	1		
10/7/2017	3:50:49	CCB	1		
10/7/2017	3:54:00	LL CCV	1		
10/7/2017	3:57:13	ICSA	1		
10/7/2017	4:00:23	ICSAB	1		
10/7/2017	4:03:20	92357250004	1		23876
10/7/2017	4:06:31	92357250005	1		23876
10/7/2017	4:09:39	92357250006	1		23876
10/7/2017	4:12:45	92357250007	1		23876
10/7/2017	4:15:53	92357250008	1		23876
10/7/2017	4:19:01	92357250008L	5		23876
10/7/2017	4:22:11	2109909	1		23869
10/7/2017	4:25:22	2109910	1		23869
10/7/2017	4:28:19	35337752001	1		23869
10/7/2017	4:31:29	2109911	1		23869
10/7/2017	4:34:26	CCV	1		

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/7/2017	4:37:23	CCB	1		
10/7/2017	4:40:34	LL CCV	1		
10/7/2017	4:43:47	2109912	1		23869
10/7/2017	4:46:43	92357169002	1		23869
10/7/2017	4:49:53	92357169003	1		23869
10/7/2017	4:53:03	92357169004	1		23869
10/7/2017	4:56:13	92357169005	1		23869
10/7/2017	4:59:22	92357169006	1		23869
10/7/2017	5:02:31	92357169007	1		23869
10/7/2017	5:05:42	92357169008	1		23869
10/7/2017	5:08:51	92357169009	1		23869
10/7/2017	5:12:00	92357169010	1		23869
10/7/2017	5:15:10	CCV	1		
10/7/2017	5:18:06	CCB	1		
10/7/2017	5:21:18	LL CCV	1		
10/7/2017	5:24:31	92357169011	1		23869
10/7/2017	5:27:40	2109913	1		23869
10/7/2017	5:30:35	2109914	1		23869
10/7/2017	5:33:31	92357169012	1		23869
10/7/2017	5:36:39	92357169013	1		23869
10/7/2017	5:39:48	92357169014	1		23869
10/7/2017	5:42:59	92357169015	1		23869
10/7/2017	5:46:07	92357169016	1		23869
10/7/2017	5:49:16	92357169017	1		23869
10/7/2017	5:52:25	92357169018	1		23869
10/7/2017	5:55:38	CCV	1		
10/7/2017	5:58:33	CCB	1		
10/7/2017	6:01:45	LL CCV	1		
10/7/2017	6:04:57	ICSA	1		
10/7/2017	6:08:07	ICSAB	1		
10/7/2017	6:11:03	92357169019	1		23869
10/7/2017	6:14:15	92356784001	1		23869
10/7/2017	6:17:23	92356784001L	5		23869
10/7/2017	6:20:33	2107642	1		23839
10/7/2017	6:23:45	2107643	1		23839
10/7/2017	6:26:41	92357160001	1		23839
10/7/2017	6:29:50	2107644	1		23839
10/7/2017	6:32:45	2107645	1		23839
10/7/2017	6:35:41	92357160002	1		23839
10/7/2017	6:38:49	92357160003	1		23839
10/7/2017	6:42:00	CCV	1		
10/7/2017	6:44:57	CCB	1		
10/7/2017	6:48:09	LL CCV	1		
10/7/2017	6:51:22	92357160004	1		23839
10/7/2017	6:54:29	92357160005	5		23839
10/7/2017	6:57:38	92357160006	1		23839
10/7/2017	7:00:49	92357160009	1		23839
10/7/2017	7:03:59	92357169016	1		23839
10/7/2017	7:07:08	92357169017	1		23839

RUN LOG

92ICP3 Run Log

Analytical Run: 20171006.txt Method:

Date	Time	Sample ID	Dil	Notes:	Batch
10/7/2017	7:10:18	92357076001	1		23839
10/7/2017	7:13:29	92357076002	1		23839
10/7/2017	7:16:37	2107646	1		23839
10/7/2017	7:19:33	2107647	1		23839
10/7/2017	7:22:31	CCV	1		
10/7/2017	7:25:27	CCB	1		
10/7/2017	7:28:39	LL CCV	1		
10/7/2017	7:31:52	92357076004	1		23839
10/7/2017	7:35:03	92357076006	1		23839
10/7/2017	7:38:15	92357076008	1		23839
10/7/2017	7:41:27	92357076010	1		23839
10/7/2017	7:44:38	92357076010L	5		23839
10/7/2017	7:47:50	CCV	1		
10/7/2017	7:50:46	CCB	1		
10/7/2017	7:53:58	LL CCV	1		
10/7/2017	7:57:09	ICSA	1		
10/7/2017	8:00:19	ICSAB	1		
10/7/2017	8:47:22	92357264001	10		23883
10/7/2017	8:50:32	92357160005	1		23839
10/7/2017	8:53:39	92356957011	1		23844
10/7/2017	8:57:06	CCV	1		
10/7/2017	9:00:02	CCB	1		
10/7/2017	9:03:14	LL CCV	1		
10/7/2017	9:06:26	ICSA	1		
10/7/2017	9:09:35	ICSAB	1		

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381457
QC Batch: Method: SM 5310B

AD-110

Analysis Method: SM 5310B

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	10/09/17 13:01			**LCSD Prepared:**			**LCSD Analyzed:**		
Total Organic Carbon	mg/L	97			90-110		25	24.2		

Type	Sample	Matrix
LCS	2113871	Water

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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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381457
QC Batch: Method SM 5310B

~~85-115~~ 90-110 <20

Analysis Method: SM 5310B

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:		**MS Analyzed:**	10/09/17 13:30		**MSD Prepared:**			**MSD Analyzed:**	10/09/17 13:42					
Total Organic Carbon	mg/L	92	92	0	90-110	10	25	25	1	1	2.7	25.7	25.8	

Type	Sample	Matrix	Client Sample ID
MS	2113872	Water	
MSD	2113873	Water	
Sample	92357050001	Water	N/A

Batch QC
- project sample

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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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 381457
QC Batch: Method: SM 5310B
Associated Lab Samples: 92357284001

Analysis Method: SM 5310B

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
7440-44-0	Total Organic Carbon	ND	mg/L	1.0	10/09/17 12:37	

Type	Sample	Matrix
BLANK	2113870	Water

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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C:\TOC3201\Data\2017_10_09_001.t32 WETA 33690 TOC 10/9/17 KOF MDL=0.5 only conc provided

	Type	Analysi	Sample Name	Sample ID	Origin	Result	Com	Status	Date / Time	Vial
1	Stand	NPOC	ww50cal	ww50cal	NPOC50pp			Comp	10/2/2017 6:36:30	68, 68,
2	Contro	NPOC	icv25	icv25	ICV.tpl	NPOC:23.92mg/L	95.7%	Comp	10/2/2017 6:54:57	66
3	Contro	NPOC	icb	icb	ICB.tpl	NPOC:-0.06752mg/		Comp	10/2/2017 7:07:01	67
4	Contro	NPOC	ccv	ccv25	CCV.tpl	NPOC:25.41mg/L	101%	Comp	10/9/2017 11:40:2	1
5	Contro	NPOC	ccb	ccb	CCB.tpl	NPOC:-0.2098mg/		Comp	10/9/2017 11:50:2	2
6	Contro	NPOC	1.0std	1.0std	1.0std.tpl	NPOC:1.014mg/L	101%	Comp	10/9/2017 12:04:5	3
7	Unkno	NPOC	Na2CO3 Check	check	NPOC50pp	NPOC:-0.2193mg/		Comp	10/9/2017 12:17:2	4
8	Unkno	NPOC	2113870	WETA_33690	NPOC50pp	NPOC:-0.2155mg/		Comp	10/9/2017 12:37:0	2
9	Unkno	NPOC	2113871	WETA_33690	NPOC50pp	NPOC:24.23mg/L	96.9%	Comp	10/9/2017 1:01:29	1
10	Unkno	NPOC	92357050001	WETA_33690	NPOC50pp	NPOC:2.744mg/L		Comp	10/9/2017 1:18:55	5
11	Unkno	NPOC	2113872	WETA_33690	NPOC50pp	NPOC:25.71mg/L		Comp	10/9/2017 1:30:49	6
12	Unkno	NPOC	2113873	WETA_33690	NPOC50pp	NPOC:25.80mg/L		Comp	10/9/2017 1:42:53	7
13	Unkno	NPOC	92357050002	WETA_33690	NPOC50pp	NPOC:0.8971mg/		Comp	10/9/2017 1:57:26	8
14	Unkno	NPOC	92357050003	WETA_33690	NPOC50pp	NPOC:1.896mg/L		Comp	10/9/2017 2:07:47	9
15	Unkno	NPOC	92357284001	WETA_33690	NPOC50pp	NPOC:4.721mg/L		Comp	10/9/2017 2:18:14	10
16	Contro	NPOC	ccv	ccv25	CCV.tpl	NPOC:23.46mg/L	93.8%	Comp	10/9/2017 2:30:13	11
17	Contro	NPOC	ccb	ccb	CCB.tpl	NPOC:-0.2186mg/		Comp	10/9/2017 2:44:17	12
18	Unkno	NPOC	Na2CO3 Check	check	NPOC50pp	NPOC:-0.1385mg/		Comp	10/9/2017 2:54:38	13
19*	Unkno	NPOC	2113866	WETA_33689	NPOC50pp			Defin		12
20*	Unkno	NPOC	2113867	WETA_33689	NPOC50pp			Defin		11
21*	Unkno	NPOC	92357790001	WETA_33689	NPOC50pp			Defin		14
22*	Unkno	NPOC	2113868	WETA_33689	NPOC50pp			Defin		15
23*	Unkno	NPOC	2113869	WETA_33689	NPOC50pp			Defin		16
24*	Unkno	NPOC	92357790002	WETA_33689	NPOC50pp			Defin		17
25*	Unkno	NPOC	92357790003	WETA_33689	NPOC50pp			Defin		18
26*	Unkno	NPOC	92357790004	WETA_33689	NPOC50pp			Defin		19
27*	Unkno	NPOC	92357790005	WETA_33689	NPOC50pp			Defin		20
28*	Contro	NPOC	ccv	ccv25	CCV.tpl			Defin		21
29*	Contro	NPOC	ccb	ccb	CCB.tpl			Defin		22
30*	Unkno	NPOC	NaCO3 Check	check	NPOC50pp			Defin		23
31*	Unkno	NPOC	2113281	WETA_33682	NPOC50pp			Defin		22
32*	Unkno	NPOC	2113283	WETA_33682	NPOC50pp			Defin		21
33*	Unkno	NPOC	92357169015	WETA_33682	NPOC50pp			Defin		24
34*	Unkno	NPOC	2113284	WETA_33682	NPOC50pp			Defin		25
35*	Unkno	NPOC	2113285	WETA_33682	NPOC50pp			Defin		26
36*	Unkno	NPOC	92357169016	WETA_33682	NPOC50pp			Defin		27
37*	Unkno	NPOC	92357169017	WETA_33682	NPOC50pp			Defin		28
38*	Unkno	NPOC	92357169018	WETA_33682	NPOC50pp			Defin		29
39*	Unkno	NPOC	92357169019	WETA_33682	NPOC50pp			Defin		30
40*	Contro	NPOC	ccv	ccv25	CCV.tpl			Defin		31
41*	Contro	NPOC	ccb	ccb	CCB.tpl			Defin		32
42*	Unkno	NPOC	92357338001	WETA_33682	NPOC50pp			Defin		33
43*	Unkno	NPOC	92357338002	WETA_33682	NPOC50pp			Defin		34
44*	Unkno	NPOC	92356484001	WETA_33682	NPOC50pp			Defin		35
45*	Unkno	NPOC	92356484002	WETA_33682	NPOC50pp			Defin		36
46*	Unkno	NPOC	92356484003	WETA_33682	NPOC50pp			Defin		37
47*	Unkno	NPOC	92357328001	WETA_33682	NPOC50pp			Defin		38
48*	Unkno	NPOC	2113286	WETA_33682	NPOC50pp			Defin		39
49*	Unkno	NPOC	2113287	WETA_33682	NPOC50pp			Defin		40
50*	Unkno	NPOC	92357328002	WETA_33682	NPOC50pp			Defin		41
51*	Unkno	NPOC	92357328003	WETA_33682	NPOC50pp			Defin		42

90-110
<MDL
90-110
<MDL
50-150
<MDL
90-110
<MDL

KOF 10/9/17

10/9/2017 2:56:58 PM

no area counts provided for recalculation of results

Instr.Information

System	Pace
Instrument Options	TOC/ASI/Sparge Kit/
Catalyst	Regular Sensitivity

Cal. Curve

Sample Name:	ww50cal
Sample ID:	ww50cal
Cal. Curve:	NPOC50ppm.2017_10_02_16_12_39.cal
Status	Completed

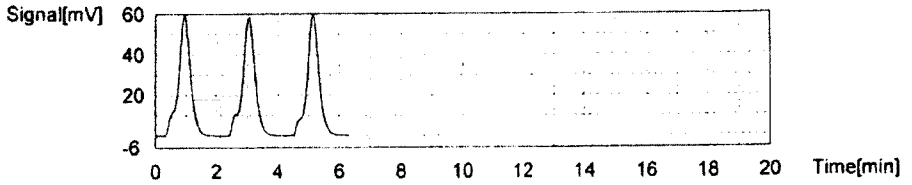
Type Anal.

Standard NPOC

Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	164.4	50uL	1	*******		10/2/2017 4:25:37 PM
2	165.6	50uL	1	*******		10/2/2017 4:27:52 PM
3	163.1	50uL	1	*******		10/2/2017 4:30:08 PM

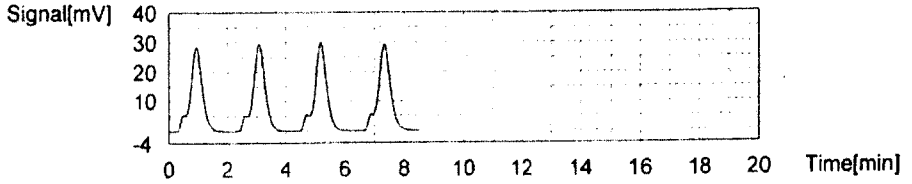
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 164.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	81.09	50uL	2	*******	E	10/2/2017 4:46:08 PM
2	83.50	50uL	2	*******		10/2/2017 4:48:23 PM
3	84.67	50uL	2	*******		10/2/2017 4:50:43 PM
4	84.85	50uL	2	*******		10/2/2017 4:52:58 PM

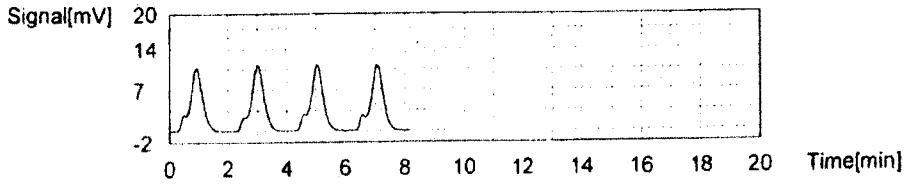
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 84.34



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	32.89	50uL	5	*******	E	10/2/2017 5:08:52 PM
2	33.99	50uL	5	*******		10/2/2017 5:11:03 PM
3	34.53	50uL	5	*******		10/2/2017 5:13:13 PM
4	33.78	50uL	5	*******		10/2/2017 5:15:25 PM

Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 34.10

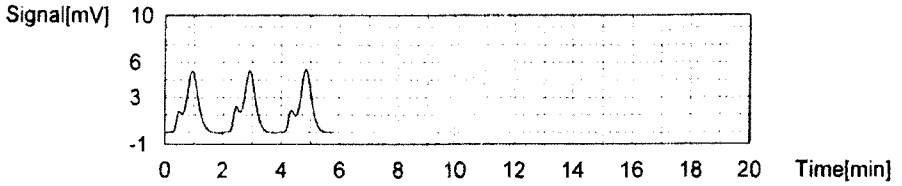


~~missing pages 2/3, 3/3~~
See next pages

Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	17.04	50uL	10	*******		10/2/2017 5:31:13 PM
2	17.20	50uL	10	*******		10/2/2017 5:33:16 PM
3	17.24	50uL	10	*******		10/2/2017 5:35:24 PM

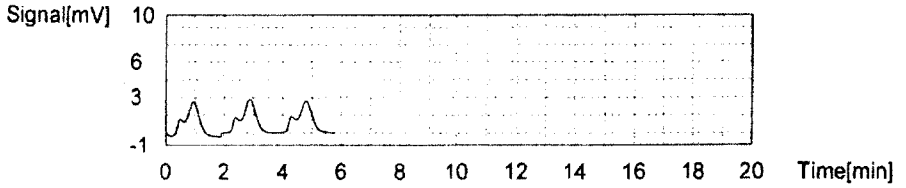
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 17.16



Conc: 2.500mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	9.727	50uL	20	*******		10/2/2017 5:50:52 PM
2	9.706	50uL	20	*******		10/2/2017 5:52:55 PM
3	9.705	50uL	20	*******		10/2/2017 5:55:03 PM

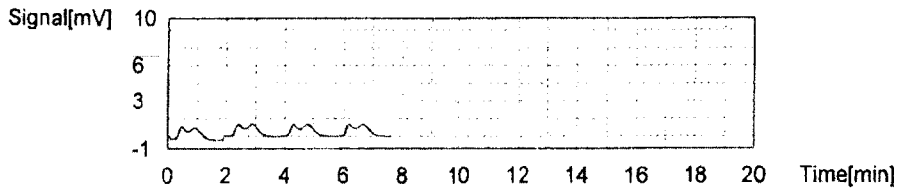
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 9.713



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	4.261	50uL	50	*******	E	10/2/2017 6:10:31 PM
2	4.595	50uL	50	*******		10/2/2017 6:12:34 PM
3	4.516	50uL	50	*******		10/2/2017 6:14:37 PM
4	4.431	50uL	50	*******		10/2/2017 6:16:40 PM

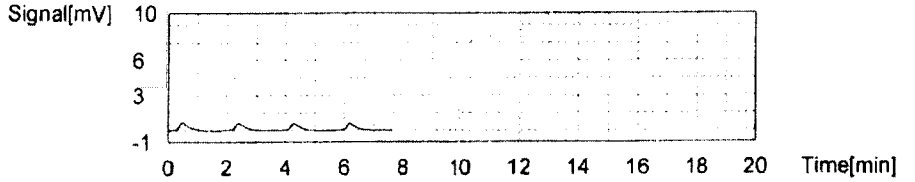
Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 4.514



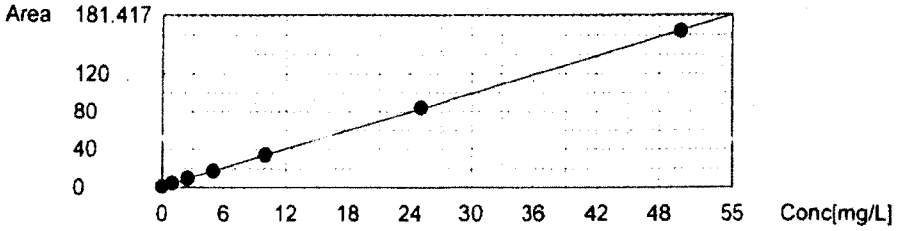
Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1.525	50uL	1	*******	E	10/2/2017 6:30:21 PM
2	1.223	50uL	1	*******		10/2/2017 6:32:24 PM
3	1.161	50uL	1	*******		10/2/2017 6:34:27 PM
4	1.106	50uL	1	*******		10/2/2017 6:36:30 PM

Acid Add. 0.000%
Sp. Time 300.0sec
Mean Area 1.163



Slope:	3.271
Intercept	1.354
r^2	0.9999
r	1.0000
Zero Shift	No



TOC Curve ReadBack

Calibration Date		10/2/2017	
Slope	3.271		
Intercept	1.354		
Conc	Area	Calc Conc	% Rec
50.0	164.4	49.85	99.7%
25.0	84.34	25.37	101.5%
10.0	34.1	10.01	100.1%
5.0	17.16	4.83	96.6%
2.5	9.713	2.56	102.2%
1.0	4.514	0.97	96.6%
0.0	1.163	-0.06	NA

Pace Analytical

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Test: Total Organic Carbon
Method: SM 5310 B -2000, Rev.2011
Method:SW-846 9060A

Analyst:	KOF
Date Analyzed:	10/4/17
Reporting Limit:	1.0 mg/L
Matrix:	Water
Batch#:	WETA33690

Instrument: 92WETA6

Sample Number	Sample I.D.	Dilution Factor is always 1 unless otherwise noted.	VIAL Used is always 1 unless otherwise noted.
ICV Second Source Standard			
CCV Calibration Source Standard			
ICB			
Inorg. Carbon Check			
2113870	BLANK for HBN 381457 [WETA/336		
2113871	LCS for HBN 381457 [WETA/33690		
92357050001	MW-4S		
2113872	MW-4S(2105297MS)		
2113873	MW-4S(2105297MSD)		
92357050002	MW-5S		
92357050003	MW-6S		
92357284001	TW-11		
	CCV		
	CCB		

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Pace Analytical™

Test: TOC

Method Number: "SM 5310 B - 2000.rev,2011"

Method Number: SW-846 9060A

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	
	WETA33690
Reporting Limit:	1.0 mg/L
Preservative:	Cool to above 0.0 - 6.0 degrees C,
	HCl
Holding Time:	28 Days
Instrument:	Shimadzu
Serial Number:	H51404535060 CS
Model Number:	TOC-VCPN
Epic Pro Inst ID:	92WTA6

Blank, ICB, CCB and Method Blank

2 N HCl		Final Vol. mL
Used, mL		DI Water
0.5		50

Calibration Standard

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
50.0	0.5	2.5	1,000	50

Note: Calibrate Daily!

ICV (Prepare From Second Source Standard)

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
25.0	0.5	1.25	1,000	50

CCV / LCS (Calibration Source)

Final Conc.	2 N HCl	Volume	From Conc.	Final Vol. mL
mg/L	Used, mL	Used, mL	mg/L	DI Water
25.0	0.5	1.25	1,000	50

How to prepare a Matrix Spike sample (Calibration Source)

Final Conc.		Volume	From Conc.	Final Vol. mL
mg/L		Used, mL	mg/L	Use Sample
25.0		0.625	1,000	25.0

1.0 Std (Calibration Source)

Final Conc.	2 N HCl	Volume	From	Final Volume
mg/L	Used, mL	Used, mL	mg/L	DI Water mL
1	0.5	0.05	1000	50.0
Final Conc.	2 N HCl	Volume	From Na_2CO_3	Final Volume

Inorganic Carbon Sparge Check 25 ppmC

Final Conc.	2 N HCl	Volume	From Na_2CO_3	Final Volume
mg/L	Used, mL	Used, mL	N	DI Water mL
25	0.5	1.7	0.1	40.0

LOQ - Quarterly Check

Final Conc.	2 N HCl	Volume	From	Final Volume
mg/L	Used, mL	Used, mL	mg/L	DI Water mL
2.5	0.5	0.125	1000	50.0

Analysis Reagents

SS#	
15695	**Calibration Standard, 1,000 mg/L Carbon:** Commercially purchased.
116223	**Second Source Standard, 1000 mg/L Carbon:** Commercially purchased.
15039	**Inorganic Carbon Check Std - 0.02N Na_2CO_3**

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

90-110%

QC Batch: 380961
QC Batch: Method: SM 2320B

Analysis Method: SM 2320B

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD	QC Limits LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:	**LCS Analyzed:**	10/06/17 04:26			**LCSD Prepared:**				**LCSD Analyzed:**		
Alkalinity, Total as CaCO3	mg/L	102			80-120			50	50.9		

Type	Sample	Matrix
LCS	2111050	Water

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Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380961
QC Batch: Method SM 2320B

Analysis Method: SM 2320B

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	10/06/17 04:49		**MSD Prepared:**				**MSD Analyzed:**	10/06/17 05:02					
Alkalinity, Total as CaCO3	mg/L	104	104	0	80-120	25	50	50	1	1	21.1	73.0	72.9	

Type	Sample	Matrix	Client Sample ID
MS	2111051	Water	
MSD	2111052	Water	
Sample	92357284001	Water	TW-11

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Huntersville, NC 28078
(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380961
QC Batch: Method: SM 2320B
Associated Lab Samples: 92357284001

Analysis Method: SM 2320B

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
	Alkalinity, Total as CaCO3	ND	mg/L	5.0	10/06/17 04:17	

Type	Sample	Matrix
BLANK	2111049	Water

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MDL = 1.0

tiamo 2.5 Build 116
License ID: 14676229

Computer name: 93autotitrator

User (short name): inst
Printed: 2017-10-06 15:40:30 UTC-4

Determination overview

90-110%

	ID1.Value	Sample size...	Initial pH (s.u)	RS03.Name	RS03.Value
1	CCB	100	4.77	Total Alkalinity	-0.530 <MDL
2	CCV	50	8.27	Total Alkalinity	50.752 102%
3	2111052 MSD	50	7.00	Total Alkalinity	72.862
4	2111051 MS	50	7.00	Total Alkalinity	73.029
5	92357284001	100	5.74	Total Alkalinity	21.070
6	2111050 LCS	50	8.13	Total Alkalinity	50.939 102%
7	2111049 BLK	100	4.89	Total Alkalinity	-0.312 <MDL
8	CCB	100	4.91	Total Alkalinity	-0.250 <MDL
9	CCV	50	9.93	Total Alkalinity	50.939 102%
10	LOQ	50	6.74	Total Alkalinity	9.568 96%
11	ICV	50	10.00	Total Alkalinity	51.605 103%
12	ICB	100	4.81	Total Alkalinity	-0.499 <MDL
13	0.1000	1.25	0.1040	Sulfric Acid Normality	0.1039
14	0.1000	1.25	0.1041	Sulfric Acid Normality	0.1041
15	0.1000	1.25	0.0208	Sulfric Acid Normality	0.0209
16	0.1000	1.25	0.0207	Sulfric Acid Normality	0.0207
17	pH 7 Second Source Buffer	50.0	7.02	pH 2nd Meas	7.02
18	pH 12 Buffer	50.0	12.10	pH 2nd Meas	12.10
19	pH 2 Buffer	50.0	1.99	pH 2nd Meas	1.99
20		50		slope	99.10

CCV's should be analyzed prior to CCB's

Determination overview

	Unit	Temperature (deg C)	Determination start	P Alk
1	mg/L CaCO3	20.58	2017-10-06 05:26:34 UTC-4	0.000
2	mg/L CaCO3	20.74	2017-10-06 05:14:32 UTC-4	0.000
3	mg/L CaCO3	20.80	2017-10-06 05:02:02 UTC-4	0.000
4	mg/L CaCO3	20.80	2017-10-06 04:49:30 UTC-4	0.000
5	mg/L CaCO3	20.66	2017-10-06 04:38:07 UTC-4	0.000
6	mg/L CaCO3	20.78	2017-10-06 04:26:04 UTC-4	0.000
7	mg/L CaCO3	20.60	2017-10-06 04:17:22 UTC-4	0.000
8	mg/L CaCO3	21.29	2017-10-05 10:35:23 UTC-4	0.000
9	mg/L CaCO3	21.05	2017-10-05 10:24:18 UTC-4	13.478
10	mg/L CaCO3	21.08	2017-10-05 10:15:15 UTC-4	0.000
11	mg/L CaCO3	21.03	2017-10-05 10:04:09 UTC-4	15.142
12	mg/L CaCO3	21.27	2017-10-05 09:55:15 UTC-4	0.000
13	mol/L		2017-10-05 09:51:40 UTC-4	
14	mol/L		2017-10-05 09:48:39 UTC-4	
15	mol/L		2017-10-05 09:43:37 UTC-4	
16	mol/L		2017-10-05 09:36:57 UTC-4	
17		21.33	2017-10-05 09:21:13 UTC-4	
18		21.30	2017-10-05 09:15:22 UTC-4	
19		21.34	2017-10-05 09:09:38 UTC-4	
20	%		2017-10-05 09:00:07 UTC-4	

Determination overview

	Hydroxide	Carbonate	Bicarbonate
1	0.530	-1.061	0.000
2	0.000	0.000	50.752
3	0.000	0.000	72.862
4	0.000	0.000	73.029
5	0.000	0.000	21.070
6	0.000	0.000	50.939
7	0.312	-0.624	0.000
8	0.250	-0.499	0.000
9	0.000	26.957	23.982
10	0.000	0.000	9.568
11	0.000	30.285	21.320
12	0.499	-0.998	0.000
13			
14			
15			
16			
17			
18			
19			
20			

Calibration report

Determination

Method . . . . . pH Electrode Calibration
Method saving date 2017-02-07 10:50:03 UTC-5
Method version 12
Method state . . . . . original
Determination ID . . . . . -2c809082:15e94c1c360:-25fd
Determination start 2017-10-05 09:00:07 UTC-4
Determination state . . . . . original
Determination version 1
Run number 1622
User (full name) . . . . . .
User (short name) . . . . . inst

Sample data

Sample Identification 1 . . . . . .
Sample size 50

CAL LOOP pH **calibration loop pH.1**

Sensor name . . . . . pH electrode
Sensor type . . . . . pH electrode
pH(0) 6.982
Slope . . . . . 99.1 %
Variance 0.038
Calibration temperature . . . . . (Pt1000) . . . . . 21.3 °C
Calibration date 2017-10-05 09:09:32 UTC-4
Calibration method . . . . . pH Electrode Calibration

	pH	U [mV]	T [°C]	t [s]
Buffer 1	4.000	172.7	21.4	123
Buffer 2	7.015	-2.1	21.4	120
Buffer 3	10.044	-177.2	21.3	120

Soil/Manual Dilution Worksheet

Analyst: KDF

Date: 100517

Batch # WET55728

✓ Check here if no manual dilutions performed for entire batch.

SS # Boiling Chips Tube / Serum Filter SS No.:

Other Filter SS No.:

* If any samples are filtered, MB and LCS must also be filtered

Sample ID	Initial Vol, mls/g	The Final Vol is 6mL for TCN or 50mL for all other test unless otherwise noted.	Samples not filtered unless a "Y" is noted*.
2111049			
2111050			
92357284001			
2111051			
2111052			

Pace Analytical - Asheville, 2225 Riverside Dr., Asheville, NC 28804

Test: Alkalinity

Method Number: SM 2320 B -1997, Rev.2011

Date Analyzed:	See Bench Sheet
Analyst Initials:	See Bench Sheet
Batch(s):	WET55728
Reporting Limit:	DW 1.0 mg/L / WW 5.0
Preservative:	Cool to above 0.0-6.0 degrees C
Holding Time:	14 Days
Instrument:	Autotitrator
Serial Number:	188800102248
Model Number:	888 Titrando
Epic Pro ID:	92WETD

Titrant = 0.02N Sulfuric Acid

Normality Check = 0.1N Sodium Carbonate

ICV / CCV					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
50		2.5	1000*	50	WW
50		5.0	1000*	100	DW

* Note: 0.02N = 1000 mg/L Alkalinity, 0.1N = 5000 mg/L Alkalinity

LCS					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
50		2.5	1000*	50	WW
50		5.0	1000*	100	DW
MS					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL Sample	
50		0.5	5000*	50	WW
50		1.0	5000*	100	DW
LOQ					
Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water	
10		0.5	1,000	50	WW
2		0.2	1,000	100	DW

Analysis Reagents: SS#s

16103	0.1N Sodium Carbonate	16269	pH 4 buffer	16144	pH 7 buffer 2nd Source
16340	0.02N Sodium Carbonate	16351	pH 7 buffer	16292	pH 2buffer
16035	0.02N Sodium Carbonate, 2nd Source				
16291	0.02N Sulfuric Acid	16294	pH 10 buffer	16333	pH 12 buffer
15620	0.1N Sulfuric Acid	15382	Electrode ID Number		

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(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380191
QC Batch: Method: EPA 9056A

Analysis Method: EPA 9056A

Analyte	Units	% Rec LCS	% Rec LCSD	LCS RPD	QC Limits LCS	QC Limits MAX RPD LCSD	Spike LCS	Results LCS	Results LCSD	Qual
LCS Prepared:		**LCS Analyzed:** 09/29/17 23:53			**LCSD Prepared:**			**LCSD Analyzed:**		
Chloride	mg/L	107			90-110		50	53.7		
Nitrate as N	mg/L	107			90-110		2.5	2.7		
Sulfate	mg/L	106			90-110		50	53.2		

Type	Sample	Matrix
LCS	2107173	Water

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QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

90-110 LD

QC Batch: 380191
QC Batch: Method EPA 9056A

Analysis Method: EPA 9056A

Analyte	Units	% Rec MS	% Rec MSD	MS RPD	QC Limits MS/MSD	QC Limits MAX RPD MSD	Spike MS	Spike MSD	Dilution MS	Dilution MSD	Results Sample	Results MS	Results MSD	Qual
MS Prepared:	**MS Analyzed:**	09/30/17 00:25		**MSD Prepared:**			**MSD Analyzed:**	09/30/17 00:41						
Chloride	mg/L	103	103	0	90-110	10	50	50	1	1	22.1	73.7	73.7	
Nitrate as N	mg/L	105	105	0	90-110	10	2.5	2.5	1	1	ND	2.6	2.6	
Sulfate	mg/L	103	103	0	90-110	10	50	50	1	1	2.9	54.4	54.5	

Type	Sample	Matrix	Client Sample ID
MS	2107174	Water	
MSD	2107175	Water	
Sample	92357284001	Water	TW-11

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(704)875-9092

QC SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

QC Batch: 380191
QC Batch: Method: EPA 9056A
Associated Lab Samples: 92357284001

Analysis Method: EPA 9056A

CAS No.	Analyte	Results	Units	Report Limit	Analyzed	Qual
16887-00-6	Chloride	ND	mg/L	1.0	09/29/17 23:37	
14797-55-8	Nitrate as N	ND	mg/L	0.10	09/29/17 23:37	
14808-79-8	Sulfate	ND	mg/L	1.0	09/29/17 23:37	

Type	Sample	Matrix
BLANK	2107172	Water

all ND

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WETA 33577

MW 09-30-17

Cl, NO3, SO4

Sample Name	RS.Anions.I F	RS.Anions.(Cl	RS.Anions.I NO2	RS.Anions.I Br	RS.Anions.I NO3	RS.Anions.I PO4	RS.Anions.! SO4	Method na	Analysis Start Date/Ti	RS.(04) Anion Dilution Factor	
	.5				MDL .05		.5				
LEVEL 1								MiVDT 4.0_	2017-08-02 11:22:10	1	
LEVEL 2	0.085	0.848	0.069	0.081	0.075	0.078	0.906	MiVDT 4.0_	2017-08-02 11:42:57	1	
LEVEL 3	1.285	25.136	1.217	1.126	1.167	1.197	26.402	MiVDT 4.0_	2017-08-02 11:58:54	1	
LEVEL 4	2.529	50.028	2.571	2.406	2.456	2.452	50.86	MiVDT 4.0_	2017-08-02 12:14:51	1	
LEVEL 5	3.789	75.656	3.672	3.825	3.818	3.807	75.306	MiVDT 4.0_	2017-08-02 12:30:49	1	
LEVEL 6	4.917	99.37	5.092	5.192	5.1	5.077	97.682	MiVDT 4.0_	2017-08-02 12:46:47	1	
ICB								MiVDT 4.0_	2017-08-02 13:18:43	1	<MDL
ICV	2.674 105%	52.735	2.752	2.533	2.643 106%	2.705 105%	52.654	MiVDT 4.0_	2017-08-02 13:50:46	1	90-110
PRL	0.08 98%	0.857	0.074	0.079	0.073	0.089 92%	0.919	MiVDT 4.0_	2017-09-29 22:23:06	1	50-150
CCB						0.035		MiVDT 4.0_	2017-09-29 22:49:15	1	<MDL
CCV	2.782 107%	53.432	2.678	2.537	2.658 106%	2.499 106%	52.93	MiVDT 4.0_	2017-09-29 23:05:14	1	90-110
CCV Repeated	2.673 107%	53.482	2.703	2.531	2.653 106%	2.483 106%	53.015	MiVDT 4.0_	2017-09-29 23:21:14	1	
2107172						0.044		MiVDT 4.0_	2017-09-29 23:37:11	1	
2107173	2.749 107%	53.653	2.707	2.548	2.669 107%	2.517 106%	53.164	MiVDT 4.0_	2017-09-29 23:53:12	1	
92357284001	0.042	22.117		0.056	0.024	0.048	2.863	MiVDT 4.0_	2017-09-30 00:09:11	1	
2107174	2.694	73.655	1.612	2.586	2.643	2.219	54.36	MiVDT 4.0_	2017-09-30 00:25:08	1	
2107175	2.69	73.746	1.62	2.584	2.64	2.266	54.5	MiVDT 4.0_	2017-09-30 00:41:07	1	
CCB	0.006	0.006				0.079		MiVDT 4.0_	2017-09-30 00:57:05	1	<MDL
CCV	2.731 107%	53.476	2.741	2.545	2.66 106%	2.525 106%	52.892	MiVDT 4.0_	2017-09-30 01:13:09	1	90-110

area counts/response not provided - cannot re calculate results

Mag _ Net

2017-10-02 3:47:08

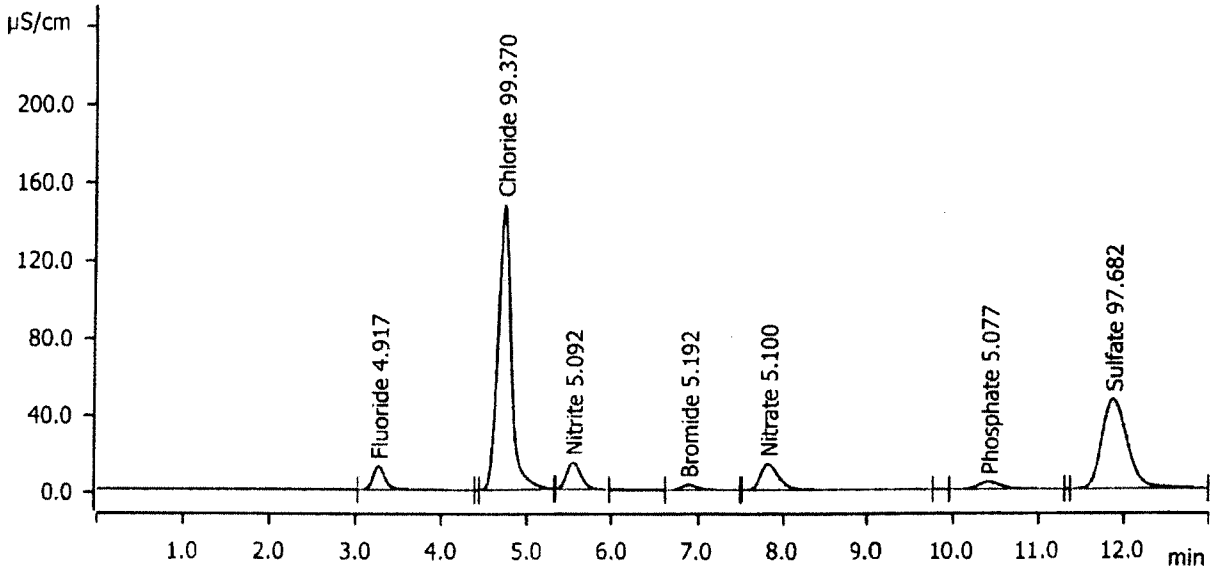
Sample data

Ident . . . . . LEVEL 6
Sample type . . . . . Standard 6
Determination start 2017-08-02 12:46:47 UTC-4
Method . . . . . MiVDT 4.0_Anion_UF PACE_08-01-2017
Operator . . . . . .

Anions

Data source . . . . . Conductivity detector 1 (930 Compact IC Flex 1)
Channel . . . . . Conductivity
Recording time . . . . . 13.0 min
Integration . . . . . Automatically
Column type . . . . . Metrosep A Supp 5 - 100/4.0
Eluent composition . . . . . not defined
Flow . . . . . 0.700 mL/min
Maximum flow monitored yes
Pressure . . . . . 6.88 MPa
Maximum pressure monitored yes
Temperature . . . . . 23.9 °C

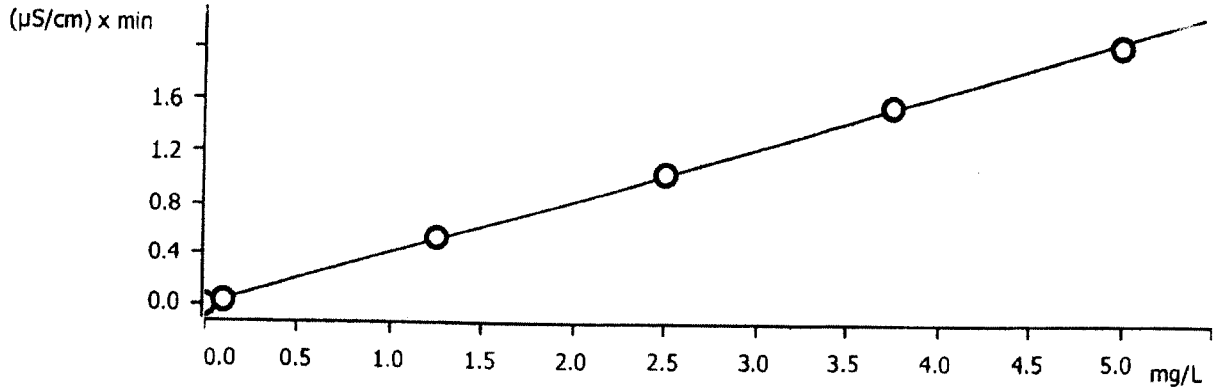
Anions



Peak number	Retention time min	Area (µS/cm) x min	Height µS/cm	Concentration mg/L	Component name
1	3.262	2.0346	12.318	4.917	Fluoride
2	4.723	26.2874	147.021	99.370	Chloride
3	5.533	2.7096	13.915	5.092	Nitrite
4	6.895	0.5266	2.623	5.192	Bromide
5	7.820	3.2941	13.641	5.100	Nitrate
6	10.422	1.1335	3.725	5.077	Phosphate
7	11.868	16.1874	46.947	97.682	Sulfate

Metrohm

Fluoride (Anions)



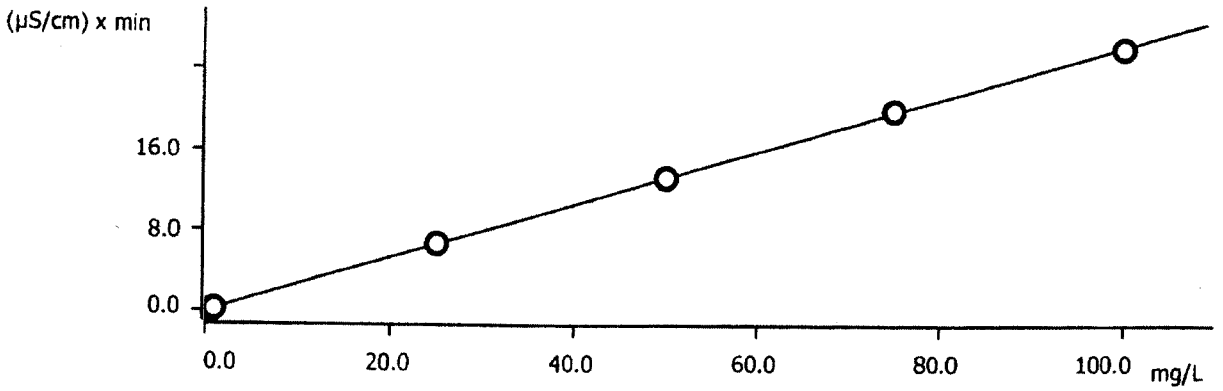
Function: . . . . . *A = - 1.42213E-7 + 0.0206878× Q*

Relative standard deviation . . . . . *2.452569 %*

Correlation coefficient *0.999736*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0352	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.5317	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.0466	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	1.5675	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	2.0346	LEVEL 6	2017-08-02 12:46:47 UTC-4

Chloride (Anions)



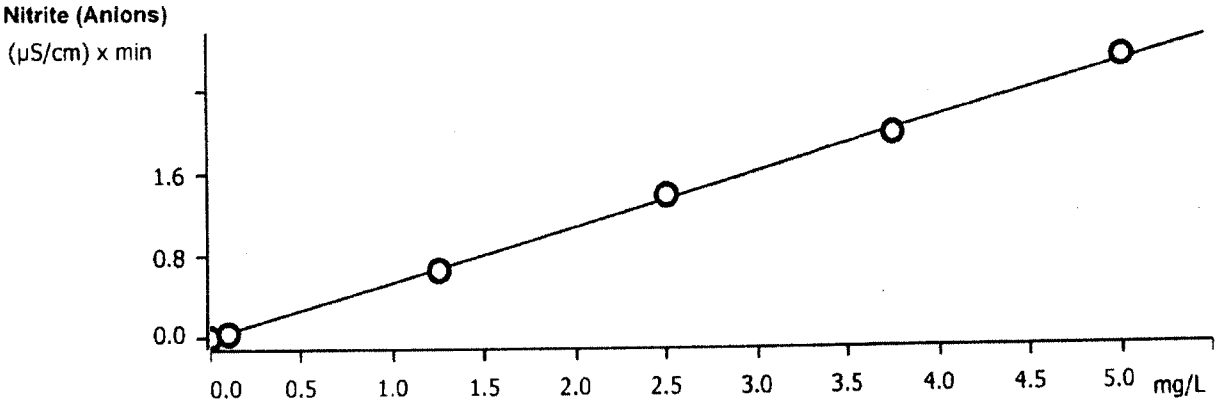
Function: . . . . . *A = - 1.71229E-7 + 0.0132270× Q*

Relative standard deviation . . . . . *1.114459 %*

Correlation coefficient 0.999947

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	1.000	20.0	1.0	1.0	0.2243	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	25.000	20.0	1.0	1.0	6.6495	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	50.000	20.0	1.0	1.0	13.2343	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	75.000	20.0	1.0	1.0	20.0141	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	100.000	20.0	1.0	1.0	26.2874	LEVEL 6	2017-08-02 12:46:47 UTC-4

Nitrite (Anions)



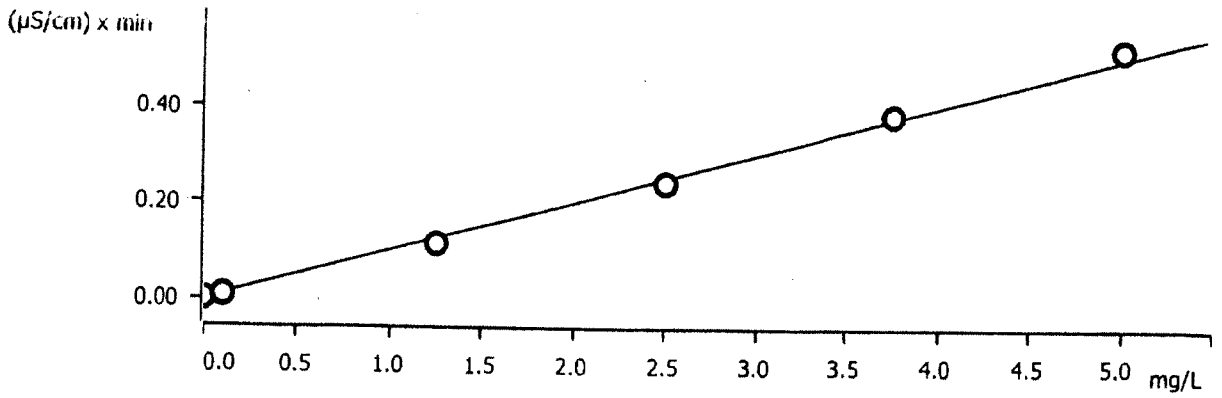
Function: . . . . . A = - 4.60505E-7 + 0.0266062× Q

Relative standard deviation . . . . . 3.502797 %

Correlation coefficient 0.999482

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0365	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.6476	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.3682	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	1.9539	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	2.7096	LEVEL 6	2017-08-02 12:46:47 UTC-4

Bromide (Anions)



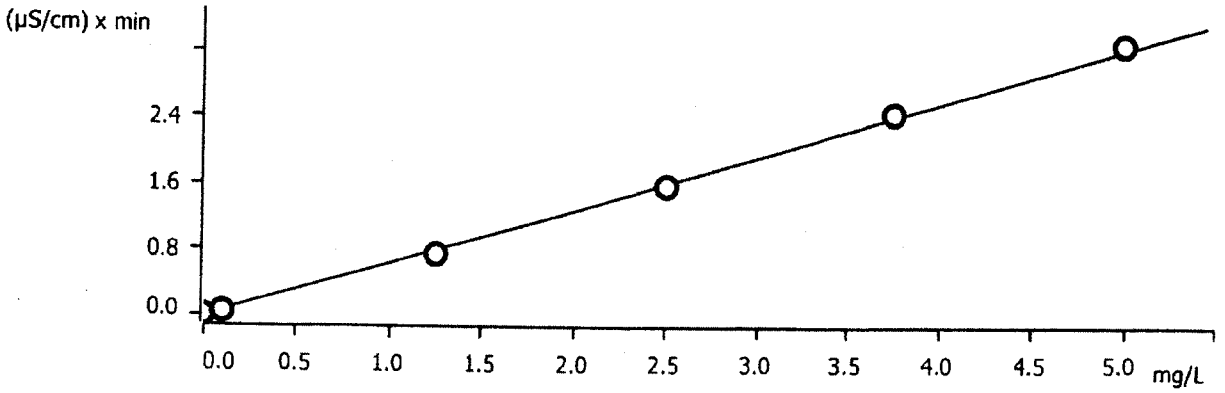
Function: . . . . . *A = - 3.21689E-7 + 5.07116E-3× Q*

Relative standard deviation . . . . . *6.154752 %*

Correlation coefficient *0.998477*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0083	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.1142	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	0.2440	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	0.3880	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	0.5266	LEVEL 6	2017-08-02 12:46:47 UTC-4

Nitrate (Anions)



Function: . . . . . *A = - 3.75636E-7 + 0.0322957× Q*

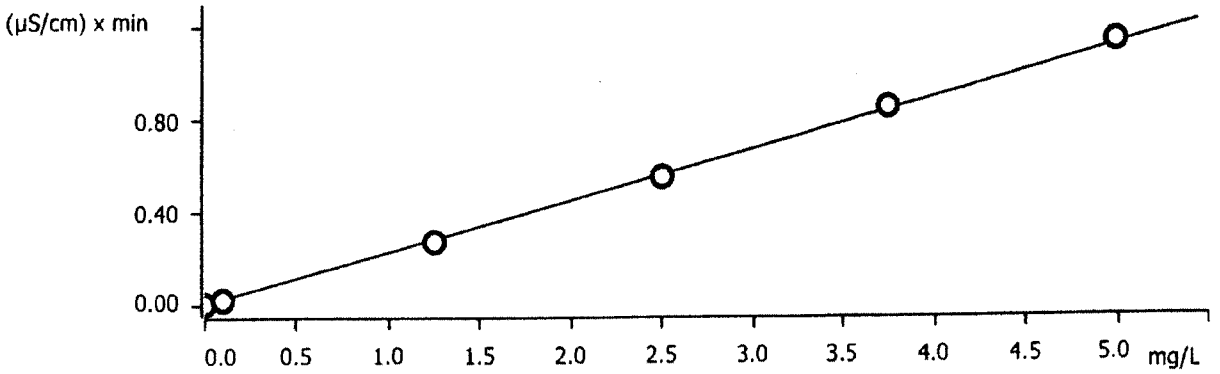
Relative standard deviation . . . . . *3.681185 %*

Correlation coefficient *0.999441*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 2	1	0.100	20.0	1.0	1.0	0.0488	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.7541	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	1.5867	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	2.4664	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	3.2941	LEVEL 6	2017-08-02 12:46:47 UTC-4

Phosphate (Anions)



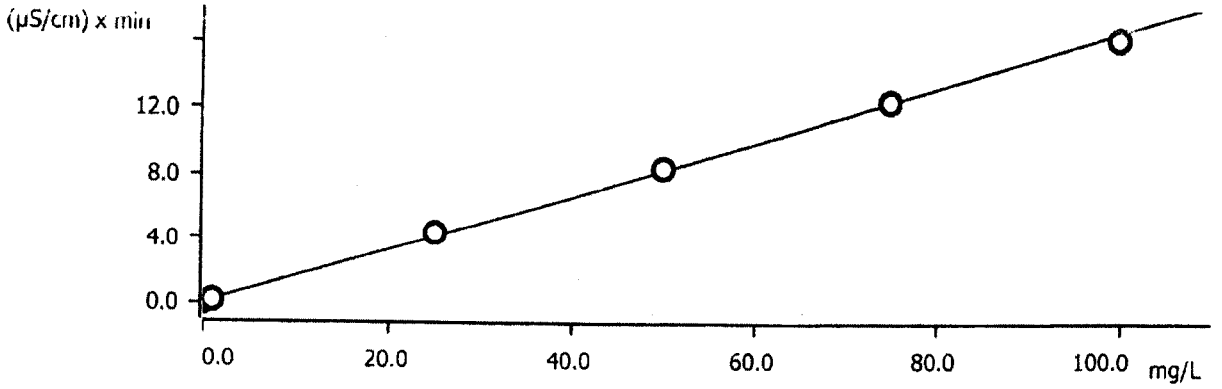
Function: . . . . . *A = - 3.18462E-7 + 0.0111628× Q*

Relative standard deviation . . . . . *2.889590 %*

Correlation coefficient *0.999652*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	0.100	20.0	1.0	1.0	0.0174	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	1.250	20.0	1.0	1.0	0.2673	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	2.500	20.0	1.0	1.0	0.5474	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	3.750	20.0	1.0	1.0	0.8500	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	5.000	20.0	1.0	1.0	1.1335	LEVEL 6	2017-08-02 12:46:47 UTC-4

Sulfate (Anions)



Function: . . . . . *A = - 5.37096E-8 + 8.28579E-3× Q*

Relative standard deviation . . . . . *3.416502 %*

Correlation coefficient *0.999488*

Sample type	Index	Conc.	Volume	Dilution	Sample amount	Area	Ident	Date
Standard 1	1	0.000	20.0	1.0	1.0	n. d.	LEVEL 1	2017-08-02 11:22:10 UTC-4
Standard 2	1	1.000	20.0	1.0	1.0	0.1501	LEVEL 2	2017-08-02 11:42:57 UTC-4
Standard 3	1	25.000	20.0	1.0	1.0	4.3752	LEVEL 3	2017-08-02 11:58:54 UTC-4
Standard 4	1	50.000	20.0	1.0	1.0	8.4283	LEVEL 4	2017-08-02 12:14:51 UTC-4
Standard 5	1	75.000	20.0	1.0	1.0	12.4794	LEVEL 5	2017-08-02 12:30:49 UTC-4
Standard 6	1	100.000	20.0	1.0	1.0	16.1874	LEVEL 6	2017-08-02 12:46:47 UTC-4

Soil/Manual Dilution Worksheet

Analyst:	MW
Date:	09-29-17
Batch #	WETA33577
SS # Boiling Chips	NA
Tube / Serum Filter SS No.:	
Other Filter SS No.:	

✓ Check here if no manual dilutions performed for entire batch.

* If any samples are filtered, MB and LCS must also be filtered

Sample ID	Initial Vol, mls/g	The Final Vol is 6mL for TCN or 50mL for all other test unless otherwise noted.	Samples not filtered unless a "Y" is noted*.
2107172			
2107173			
92357284001			
2107174			
2107175			

Pace Analytical™

Test: Ion Chromatography

Method Number: EPA 300.0, Rev.2.1 (1993)

Method Number: SW 846 -9056A

Batch(s):	WETA33577
Reporting Limit:	**Fluoride 0.1 mg/L**
	Sulfate 1.0 mg/L
Preservative:	**Cool to above 0.0 -6.0 degrees C**

See first page - Excel Result spreadsheet for Inst used

Instrument:	**IC Metrohm 930**
Serial Number:	**1930100004114**
Epic Pro ID:	**92WTAC**
Instrument:	**IC Metrohm 930**
Serial Number:	**1930000109120**
Epic Pro ID:	**93WTA1**
Instrument:	**IC Metrohm 881**
Serial Number:	**1881000116126**
Epic Pro ID:	**93WTA2**
Instrument:	
Serial Number:	
Epic Pro ID:	
Instrument:	
Serial Number:	
Epic Pro ID:	

Calibration Standards

Final Conc. mg/L		Volume Used, mL	From Conc. mg/L	Final Vol. mL DI Water
Level 1		0.00	DI Water	50.0

Level 2 Calibration Standard/PRL

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 1	0.1*/1.0**	0.50	10*/100**	50

Level 3 Calibration Standard

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 2	1.25*/25**	0.125	500*/10000**	50

Level 4 Calibration Standard/CCV

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water
Standard Mix 2	2.5*/50**	0.25	500*/10000**	50

Level 5 Calibration Standard/CCV

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 2	3.75*/75**	0.375	500*/10000**	50

Level 6 Calibration Standard

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 2	5.0*/100**	0.50	500*/10000**	50

Level 7 Calibration Standard

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	Final Vol. mL DI water/Sample
Standard Mix 2	7.5*/150**	0.75	500*/10000**	50

Second Source ICV/LCS

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	DI water /Sample
Standard Mix 3	2.5*/50**	0.50	250*/5000**	50

Matrix Spike

Final Conc. (mg/L)		Volume used, mL	From Conc. (mg/L)	Final Vol. mL Sample
Standard Mix 2	2.5*/50**	0.05	500*/10000**	10

*F, NO2, Br, NO3, PO4

**Cl, SO4

SECTION 5

LABORATORY CASE NARRATIVES AND

PROJECT CHAIN-OF-CUSTODY RECORDS

Pace Analytical
www.pacelabs.com

Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 8260**
Description: 8260 MSV Low Level SC
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
8 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 6010**
Description: 6010 MET ICP
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below. ✓

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below. ✓

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below. ✓

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below. ✓

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below. ✓

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below. ✓

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below. ✓

Additional Comments:

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **SM 5310B**
Description: 5310B TOC
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for SM 5310B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Brown & Caldwell_Kinder Morgan
Date: October 09, 2017

General Information:
3 samples were analyzed for EPA 9056A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357050

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92357050001	MW-4S	Water	09/27/17 17:25	09/28/17 10:45
92357050002	MW-5S	Water	09/27/17 13:15	09/28/17 10:45
92357050003	MW-6S	Water	09/27/17 15:30	09/28/17 10:45
92357050004	MW-5D	Water	09/27/17 11:50	09/28/17 10:45
92357050005	TW-8	Water	09/26/17 18:05	09/28/17 10:45
92357050006	TW-9	Water	09/27/17 10:05	09/28/17 10:45
92357050007	Duplicate	Water	09/27/17 12:00	09/28/17 10:45
92357050008	Trip Blank	Water	09/27/17 00:00	09/28/17 10:45

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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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	Brown & Caldwell	Report To	[illegible] Ruhmke	Attention	
Address	5430 Wade Park Blvd	Copy To		Company Name	
Raleigh, NC 27607				Address	
Email	rruhmke@brwncald.com	Purchase Order #		Pace Quote	
Phone	(919)424-1435 Fax	Project Name	Fountain Inn sampling	Pace Project Manager	taylor.ezell@pacelabs.com
Requested Due Date		Project #		Pace Profile #	7039-1

Regulatory Agency

State / Location

SC

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE	SAMPLE TYPE (G=GRAB, C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Iron & Manganese by 6010	Benzene by 8260	Alkalinity, Sulfate, Nitrate, C	Total Organic Carbon	~~Trip BLANK~~	~~DI Water~~	Residual Chlorine (Y/N)	92357050	
1	MW-4S	WT	G	9/27	1725				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	001
2	MW-5S	WT	G	9/27	1315				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	002
3	MW-5D	WT	G	9/27	1150				3				X							X						004	
4	MW-6S	WT	G	9/27	1530				9	X	X	X	X						X	X	X	X				SHORT HOLD TIME	003
5	TW-8	WT	G	9/26	1805				3				X							X						005	
6	TW-9	WT	G	9/27	1005				3				X							X						006	
7	~~TW-8~~	WT																									
8	Duplicate	WT	G	9/27	1200				3				X							X						007	
9	~~Equipment Blank~~	WT																									
10	MS	WT	G	9/27	1005				3				X							X						(TW-9)	006
11	MSD	WT	G	9/27	1005				3				X							X						(TW-9)	1
12	~~NoClientID~~ TRIP BLANK	WT		—	—				2				X							X						008	

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)
	[signature] / BC	9/27	1850	[signature] / Pace Hts	92877	1045	3.6	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GEOFF GACAT

SIGNATURE of SAMPLER: [signature]

DATE Signed: 9·27·17

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

Laboratory receiving samples:

Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Brown and Caldwell

Project #: WO# : 92357050

92357050

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other: ____

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: 9-25-17 SM

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

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

Thermometer: ☐ IR Gun ID: T1701

Type of Ice: ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 3.6

Temp should be above freezing to 6°C

☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: W7				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: TE **Date:** 9/28

Project Manager SRF Review: TE **Date:** 9/28

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)

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 2 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Project # **WO#: 92357050**

PM: PTE Due Date: 10/09/17

CLIENT: 92-BROWNC_KM

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 ml Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1		2				1	X									3			3									
2		2				1	X									3			3									
3		2				1	X									3			3									
4																6												
5																3												
6																3												
7																3												
8																3												
9																2												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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Pace Analytical Services, LLC
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 8260**
Description: 8260 MSV Low Level SC
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
3 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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(704)875-9092

PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 6010**
Description: 6010 MET ICP
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3010A with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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Huntersville, NC 28078
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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **SM 5310B**
Description: 5310B TOC
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for SM 5310B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **SM 2320B**
Description: 2320B Alkalinity
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for SM 2320B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Method: **EPA 9056A**
Description: 9056 IC Anions 48hr
Client: Brown & Caldwell_Kinder Morgan
Date: October 10, 2017

General Information:
1 sample was analyzed for EPA 9056A. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Fountain Inn Sampling
Pace Project No.: 92357284

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92357284001	TW-11	Water	09/28/17 10:20	09/29/17 10:23
92357284002	EQUIPMENT BLANK	Water	09/28/17 10:40	09/29/17 10:23
92357284003	TRIP BLANK	Water	09/28/17 00:00	09/29/17 10:23

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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: Brown & Caldwell		Report To: Reinhard Ruhmke		Attention:	
Address: 5430 Wade Park Blvd		Copy To:		Company Name:	
Raleigh, NC 27607				Address:	Regulatory Agency
Email: ruhmke@brwncald.com		Purchase Order #:		Pace Quote:	
Phone: (919)424-1435	Fax	Project Name: Fountain Inn sampling		Pace Project Manager: taylor.ezell@pacelabs.com,	State / Location
Requested Due Date:		Project #:		Pace Profile #: 7039 1	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	Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Iron & Manganese by 6010	Benzene by 8260	Alkalinity, Sulfate, Nitrate, Cl	Total Organic Carbon	Trip BLANK	DI Water	Residual Chlorine (Y/N)	9235-72604
1 ~~43~~	~~NoClientID3~~ TW-11	WT		9/26	1020				9	X	X	X	X						X	X	X	X					01
2 ~~44~~	~~NoClientID3~~ EQUIPMENT BLANK	WT		9/26	1040				3				X							X							02
3 ~~45~~	~~NoClientID3~~ TRIP BLANK	WT		—	—				2				X							X							03
~~46~~																											
~~47~~																											
~~48~~																											
~~49~~																											
~~20~~																											
~~21~~																											
~~22~~																											
~~23~~																											
~~24~~																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	[signature] / BC	9/26	1700	[signature] / Pace HK	9/27	1023	3.6	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: GEOFF GACAT

SIGNATURE of SAMPLER: [signature] DATE Signed: 9·26·17

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

Intra-Regional Chain of Custody

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Workorder: 92357284 **Workorder Name:** FOUNTAIN INN SAMPLING **Owner Received Date:** 9/29/2017 **Due Date:** 10/10/2017

Received at:	Send To Lab:
Pace Analytical Charlotte 9800 Kincey Ave. Suite 100 Huntersville, NC 28078 Phone (704)875-9092	Pace Analytical Asheville 2225 Riverside Dr. Asheville, NC 28804 Phone (828)254-7176

Report To:
Taylor Ezell

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Unpreserved	Other				Requested Analysis: SM2320B	EPA 9056A	SM5310B	EPA 6010									LAB USE ONLY
1	TW-11	PS	9/28/2017 10:20	92357284001	Water	1	2	3				X	X	X	X									
2																								
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received By	Date/Time
1	RP Pace AVL	9/29/17 1800	[signature] /ef/stone/ HU	9/29/17 1850
2	[signature] /ef/stone/ HU	9/29/17 2125	Jon [signature] Pace AVL	9/29/17 2131
3				
4				

Comments

Cooler Temperature on Receipt 4.5 °C **Custody Seal** Y or N **Received on Ice** Y or N **Samples Intact** Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

Laboratory receiving samples:
Asheville ☐ **Eden** ☐ **Greenwood** ☐ **Huntersville** ☑ **Raleigh** ☐ **Mechanicsville** ☐

WO#: 92357284

Sample Condition Upon Receipt

Client Name: Brown & Caldwell

Project #:

92357284

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: 9-29-17 SR

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

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

Thermometer: ☐ IR Gun ID: T1701

Type of Ice: ☑ Wet ☐ Blue ☐ None

Correction Factor: **Cooler Temp Corrected (°C):** 3.6

Temp should be above freezing to 6°C
☐ Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☑ No

				Comments/Discrepancy:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	2.
Short Hold Time Analysis (<72 hr.)?	☐ Yes	☑ No	☐ N/A	3.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	4.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	5.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	6.
-Pace Containers Used?	☑ Yes	☐ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	7.
Dissolved analysis: Samples Field Filtered?	☐ Yes	☑ No	☐ N/A	8.
Sample Labels Match COC?	☑ Yes	☐ No	☐ N/A	9.
-Includes Date/Time/ID/Analysis Matrix: WT				
Headspace in VOA Vials (>5-6mm)?	☐ Yes	☑ No	☐ N/A	10.
Trip Blank Present?	☑ Yes	☐ No	☐ N/A	11.
Trip Blank Custody Seals Present?	☑ Yes	☐ No	☐ N/A	

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: (TE) **Date:** 10/2

Project Manager SRF Review: (TE) **Date:** 10/2

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)

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 2 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Project #

WO#: 92357284

PM: PTE Due Date: 10/10/17

CLIENT: 92-EROLNC_KM

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 ml Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A – lab)	SP2T-250 mL Sterile Plastic (N/A – lab)		BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1		2				1										3			3									
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pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

SECTION 6

PROJECT CORRESPONDENCE

Caroline Rowshan

From: Ammie Martin
Sent: Wednesday, November 08, 2017 11:04 AM
To: taylor.ezell@pacelabs.com
Cc: Rock J. Vitale; Caroline Rowshan; Zuvanich, David W (David); Reinhard Ruhmke
Subject: Kinder Morgan - Fountain Inn DV- Data Requests

Good morning Taylor,

We have finished the initial review of the data packages provided and have the following requests. Please see below. Please provide an estimated TAT for these requests.

Thank you!
Ammie

Ammie Martin
Senior Quality Assurance Chemist
Environmental Standards, Inc.
610.935.5577 x429

From: Caroline Rowshan
Sent: Wednesday, November 8, 2017 10:37 AM
To: Ammie Martin <amartin@envstd.com>
Subject: Kinder Morgan - Fountain Inn DV- Lab issues

Hi Ammie,

The following issues came up during the review of SDGs 92357050 and 92357284:

Benzene by 8260:

1) In both SDGs, spectra has not been provided for positive results reported for benzene. Please provide the spectra.
2) In SDG 92357050, the Trip Blank (92357070-008) analyzed on 9/30/17 @ 08:16 was not presented on the internal standard summary form. Please provide an updated summary form.
3) In SDG 92357050, there is a positive result reported for benzene for sample TW-9 on the results summary form; however, the raw data quantitation report for this sample has benzene as not-detected. Please confirm the reported results are correct.

Metals by 6010:

1) In SDG 92357050, the date and time analyzed presented on the ICSA (2) summary from are incorrect and should be 10/6/17 @ 07:28 and the ICSAB summary forms are missing from the data package. Please also confirm the true concentration for iron in the ICSA standards.

TOC by 5310:

1) In both SDGs, the data package is missing pages 2 and 3 of the initial calibration data summary. Please provide the missing pages.

Anions by 9056:

1) In SDG 92357284, the sample data summary report provided on pages 356-364 of the data package is not applicable to the Initial calibration analyzed on 8/2/17 and the samples/QC analyzed on 9/29 and 9/20/17. Please provide the applicable data summary report.

Thanks,
Caroline

Caroline Rowshan
Quality Assurance Chemist
Environmental Standards, Inc.
1140 Valley Forge Road • PO Box 810 • Valley Forge, PA 19482
610.935.5577 x415 • www.envstd.com • crowshan@envstd.com

Emergency Response Quality Assurance Hotline: 855.374.7272

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