SSFL NASA Area I LOX and Area II Groundwater Monitoring Report Third Quarter 2016

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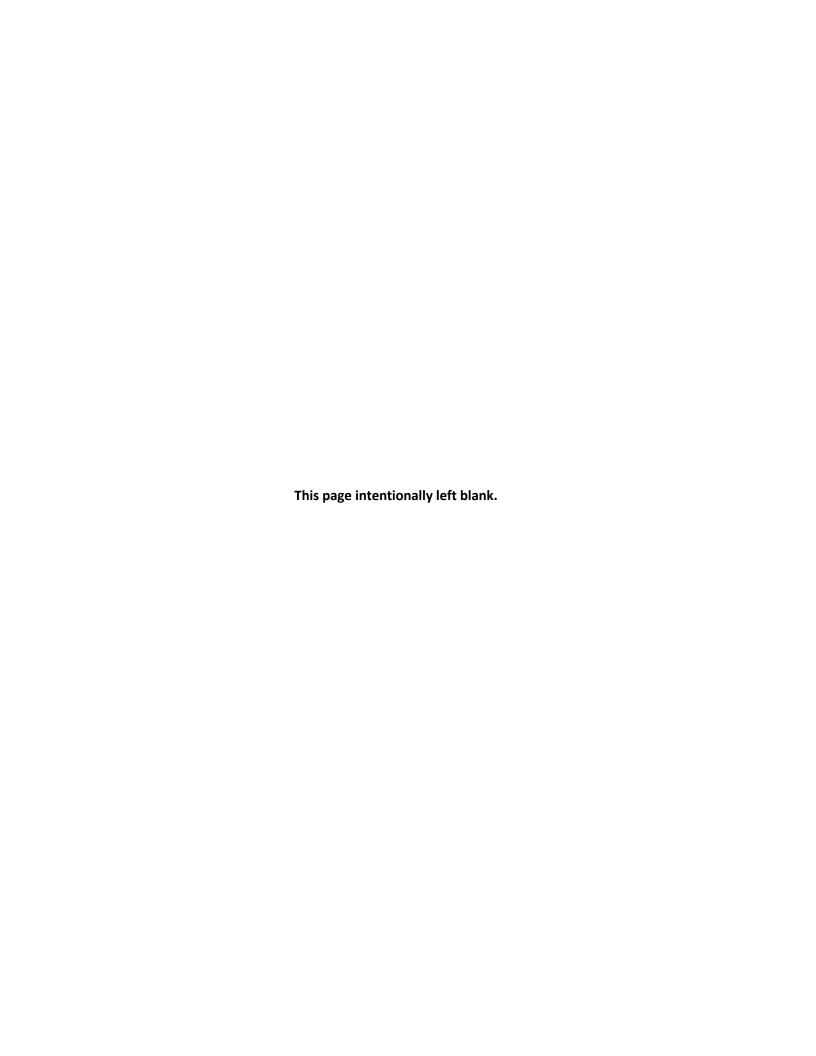
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Acronyms and Abbreviations

% C percent correct

μg/L microgram(s) per liter

AIG area of impacted groundwater

Boeing The Boeing Company

CAIM corrective action interim measure CCR California Code of Regulations

COC contaminant of concern

DCE dichloroethene

DOE U.S. Department of Energy

DRO diesel range organic

DTSC Department of Toxic Substances Control

DUA data usability assessment

EB equipment blank

EPA U.S. Environmental Protection Agency

FB field blank FD field duplicate

FLUTe Flexible Liner Underground Technologies

GRO gasoline range organics

LOX liquid oxygen

MCL maximum contaminant level

mg/L milligram(s) per liter

MS matrix spike

MSD matrix spike duplicate

NASA National Aeronautics and Space Administration

NDMA n-nitrosodimethylamine

NGVD29 National Geodetic Vertical Datum of 1929

pCi/L picoCurie(s) per liter
PCP Post-Closure Permit
POC point of compliance
QA quality assurance
QC quality control

SSFL Santa Susana Field Laboratory
SVOC semivolatile organic compound

SWGW RBSL sitewide groundwater risk-based screening level

TB trip blank
TCE trichloroethene

VOC volatile organic compound

WQSAP Water Quality Sampling and Analysis Plan

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Executive Summary

This report provides a summary of the groundwater monitoring activities conducted during the third quarter 2016 at the Santa Susana Field Laboratory (SSFL) in Ventura County, California. The monitoring activities included the following:

- Collecting groundwater quality samples in accordance with the Post-Closure Permit Monitoring Program (DTSC, 2013), the associated Regulated Unit Water Quality Sampling and Analysis Plans (WQSAPs) (Haley & Aldrich, 2010a, 2010b), and the Site-Wide WQSAP (Haley & Aldrich, 2010c)
- Collecting scheduled third quarter 2016 groundwater quality samples with the exceptions identified in this report
- Collecting groundwater level measurements and using groundwater elevations from the third quarter 2016 to develop a groundwater elevation contour map for this report
- Evaluating and completing well maintenance needs

This report provides the results of the third quarter 2016 groundwater monitoring activities. The following additional information is included in this report:

- First-time analytical detections from the third quarter 2016
- Exceptions to the Regulated Unit WQSAP (Haley & Aldrich, 2010a, 2010b) and the Site-Wide WQSAP (Haley & Aldrich, 2010c) for the third quarter 2016

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SECTION 1

Introduction

This report summarizes the groundwater monitoring activities conducted during the third quarter 2016 at the National Aeronautics and Space Administration's (NASA's) former Liquid Oxygen (LOX) Plant site in Area I and Area II of the Santa Susana Field Laboratory (SSFL) in Ventura County, California (Figure 1-1). Previous groundwater reports have been completed for the entire SSFL facility; however, as of January 1, 2014, NASA separated its groundwater monitoring and groundwater level monitoring program from the other two stakeholders at SSFL (The Boeing Company [Boeing] and the U.S. Department of Energy [DOE]) and is submitting a separate report for the quarterly monitoring results. The report follows a similar format as previous submittals (as prepared by MWH) but contains only information for NASA-sponsored monitoring wells.

Activities completed during the third quarter 2016 monitoring event included groundwater level gauging and groundwater quality sampling under the Post-Closure Permit (PCP) Monitoring Program (DTSC, 2013), associated Regulated Unit Water Quality Sampling and Analysis Plans (WQSAPs) (Haley & Aldrich, 2010a, 2010b), and the Site-Wide WQSAP (Haley & Aldrich, 2010c). Contours of the static non-perched groundwater elevations, generated from groundwater levels measured at SSFL, were developed in collaboration with the other SSFL stakeholders (Boeing and DOE) to produce one sitewide groundwater elevation map, discussed further in Section 2. Boeing, DOE, and NASA have reviewed and agree with the interpretation of the sitewide groundwater contour map for the Chatsworth Formation Operable Unit.

The California Department of Toxic Substances Control (DTSC) submitted a letter in 2014 requesting that NASA, Boeing, and DOE collect groundwater level and groundwater quality data at new well locations for a period of 1 year to establish baseline conditions (DTSC, 2014). Following 1 year of quarterly data collection at these new stations, data will be evaluated to determine if the addition of these stations to the Site-Wide WQSAP (Haley & Aldrich, 2010c) is warranted. On January 19, 2016, DTSC sent a letter requesting that NASA, Boeing, and DOE submit a comprehensive quarterly monitoring and sampling schedule for seeps and springs during the 2016 groundwater monitoring period (DTSC, 2016). As a result of these letters and subsequent data evaluation, data were collected from an additional 22 stations during the third quarter 2016 beyond those included in the scope outlined in the PCP and Site-Wide WQSAP.

Monitoring activities conducted during the third quarter included the following:

- Measurement of groundwater levels at the program wells
- Collection and analysis of groundwater quality samples from select wells
- Inspection of seeps in the vicinity of well WS-09A to evaluate if operational downtime has resulted in an
 accumulation of water at the surface around these seeps that would require offsite disposal

The scope of this report includes the following:

- Summary of groundwater level and groundwater quality monitoring activities
- Summary of current groundwater level data
- Development of a groundwater elevation contour map using groundwater level data obtained during the third quarter 2016
- Summary of exceptions to the WQSAPs, if any
- Summary of the status of seeps in the vicinity of well WS-09A

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- Summary of laboratory analytical results for groundwater quality samples collected during the third quarter 2016
- Discussion of significant findings regarding the monitoring program during the third quarter 2016

The groundwater monitoring performed during the third quarter 2016 and the content of this report are in compliance with the current PCP monitoring requirements and WQSAPs. The monitoring also complies with the Consent Order for Corrective Action issued on August 16, 2007 by DTSC.

Monitoring wells sampled during the third quarter, along with the corresponding monitoring programs, are listed in Table 1-1. The SSFL facility location is shown on Figure 1-1. The groundwater monitoring and groundwater level gauging stations scheduled for monitoring in third quarter 2016 are shown on Figure 1-2.

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Groundwater Monitoring

This report describes the groundwater monitoring activities conducted from July 1, 2016 through September 30, 2016, in accordance with the PCP monitoring program (DTSC, 2013), associated Regulated Unit WQSAPs (Haley & Aldrich, 2010a, 2010b), and the Site-Wide WQSAP (Haley & Aldrich, 2010c), with the exceptions described herein, and are summarized in Table 2-1.

2.1 Well Maintenance

Monitoring wells were inspected for maintenance needs during the third quarter 2016. Well maintenance completed during the third quarter 2016 included the replacement of damaged locks to monitoring wells and groundwater level gauging locations (where applicable). Modifications were made to the measuring point locations and new dedicated pumps were installed at various wells during the area of impacted groundwater (AIG) characterization effort. Following the completion of these field activities, applicable wells were resurveyed; new monitoring point elevations are provided in Table 2-2. These new measuring point elevations were used to compute the groundwater elevations presented in this report.

2.2 Groundwater Level Gauging

Groundwater level measurements for the third quarter 2016 were collected from July 11 through July 14, 2016 and on August 12, 2016. Prior to and following the gauging of groundwater level locations, portions of the water level indicator measuring tape and probe that contained visible debris and/or contacted groundwater were decontaminated. Groundwater level measurements are summarized in Table 2-3. Contours of the first-encountered non-perched Chatsworth Formation groundwater elevations, as established from groundwater levels measured during the third quarter 2016 (during July), are illustrated on Figure 2-1.

A total of 164 stations were gauged during the third quarter 2016, including 142 stations that were scheduled as part of the PCP (DTSC, 2013) and Site-Wide WQSAP (Haley & Aldrich, 2010c) and 22 stations beyond those included in the scope outlined in the PCP and Site-Wide WQSAP.

Because access was not permitted by the Brandeis property owners, NASA was unable to access the Brandeis property, and five monitoring locations (SP-29A, SP-29B, SP-29C, RD-68A and RD-68B) located on the property were not gauged during the synoptic third quarter 2016 water level gauging event. A temporary access agreement between NASA and the Brandeis property owners was reached on July 28, 2016 (permitting access from August 1, 2016 to December 31, 2016), allowing access to these five monitoring locations after the synoptic gauging event but still during the third quarter 2016. As shown in Table 2-3, groundwater level measurements were collected from these five locations on August 12, 2016.

During the third quarter 2016, 67 of the 164 stations scheduled to be gauged were observed to be dry at the time of measurement. Of the stations that contained groundwater, 21 contained a saturated groundwater column that was measured to be equal to or less than 0.5 foot, likely representing groundwater suspended in the sump of the well; these measurements are not representative of a true groundwater elevation and were not used in the groundwater elevation contouring on Figure 2-1. The groundwater level measurements collected during the third quarter 2016 are listed in Table 2-3.

2.3 Groundwater Sampling and Analysis

Groundwater quality samples were collected from July 11 to 26, 2016 and on August 12, 2016. Wells included in the PCP Regulated Unit Monitoring Program (2013 Modified PCP [DTSC, 2013]) are scheduled to be sampled semiannually during the first and third quarters of the year. Additional groundwater monitoring

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of seep FDP-882 and seep wells SP-29B, SP-33C, SP-881C, SP-881G, SP-882B, SP-882G, SP-890C, and SP-890G occurred in third quarter 2016 to satisfy the comprehensive quarterly monitoring schedule for the seeps and springs at the SSFL and to evaluate groundwater quality in the vicinity of the seeps.

Exceptions to the WQSAP that occurred in the field during groundwater quality sampling in the third quarter 2016 are shown in Table 2-1. Following NASA's response to a letter from the DTSC sent on January 19, 2016, requesting a comprehensive quarterly monitoring and sampling schedule for seeps and springs during the 2016 groundwater monitoring period (DTSC, 2016), immediate changes to the monitoring program began in the first quarter 2016 and continued in the third quarter 2016 including the following:

- Groundwater quality samples were collected from FDP-882 during the first and third quarters 2016 and submitted for volatile organic compounds (VOCs), 1,4-dioxane, and n-nitrosodimethylamine (NDMA) analyses.
- Groundwater quality samples have been and will be collected from seep well clusters SP-29 and SP-33 quarterly in 2016. Groundwater quality samples will be collected from the seep with the highest potentiometric head at each seep cluster. Analyses for samples collected at SP-29 will include VOCs, 1,2,3-trichloropropane, fluoride, and radiochemistry. Analyses for samples collected at SP-33 will include VOCs and 1,4-dioxane.
- Groundwater quality samples were collected from seep well clusters SP-881 (A, B, C, or D), SP-881G, SP-882 (A, B, C, or D), SP-882G, SP-890C, and SP-890G during the first and third quarters 2016.
 Groundwater quality samples collected from SP-881 (A, B, C, or D) and SP-882 (A, B, C, or D) were collected from the seep well having the shallowest saturated completion at each location (that is, the location most representative of groundwater that may discharge to a surface seep). Analyses for samples collected at these seep wells will include VOCs, 1,4-dioxane, and NDMA.

Groundwater quality samples were collected from 26 of the 46 planned stations in the third quarter 2016. Samples were not collected from the stations that were dry (nine locations), where the water column was less than 0.5 foot and/or was below the pump intake (five locations), or at wells included in the Corrective Action Interim Measures (CAIM) program that were not actively extracting groundwater (six locations); see Table 2-1. Quality control (QC) samples consisted of 4 field duplicates (FDs), 4 matrix spike (MS)/matrix spike duplicates (MSDs), 2 equipment blanks (EBs), 1 field blank (FB), and 17 trip blanks (TBs). Analytical services were provided by Calscience Environmental Laboratories, Inc. in Garden Grove, California. The NDMA (U.S. Environmental Protection Agency [EPA] Method 1625M) and formaldehyde (EPA Method 8315A) analyses were performed by Eurofins Lancaster Laboratories in Lancaster, Pennsylvania. Radiological analyses from samples collected from seep well cluster SP-29 during the third quarter 2016 were performed by Test America Laboratories, Inc. in St. Louis, Missouri. Groundwater field parameters were monitored during purging prior to sample collection. Groundwater sample and analysis suites collected during the third quarter 2016 are summarized in Table 2-4; analytical methods and monitoring program analyses are provided in Table 2-5. The final groundwater quality field parameters collected at each sampled well location during the third quarter 2016 are summarized in Table 2-6.

Groundwater samples were collected during the third quarter 2016 pursuant to the 2013 Modified PCP (DTSC, 2013) and Regulated Unit WQSAP (Haley & Aldrich, 2010b).

2.3.1 Post-Closure Permit Monitoring Program

The 2013 Modified PCP (DTSC, 2013) well locations are provided in Table 1-1. The PCP monitoring program includes the Evaluation Monitoring, Evaluation Monitoring (Affected Media), Point of Compliance (POC), Background, Detection Monitoring, and CAIM programs. Four regulated unit closed surface impoundments are located in Area II: Alfa/Bravo Skim Pond, Delta Skim Pond, Storable Propellant Area 1 Impoundment, and Storable Propellant Area 2 Impoundment. The PCP monitoring program includes 41 wells and groundwater samples were collected and analyzed as discussed below.

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- Detection Monitoring Program. For each regulated unit, the wells are designated as detection, POC, and/or background wells. These wells are selected to monitor for indicators of a release from the regulated unit, the quality of groundwater passing a designated POC, and the quality of groundwater not affected by releases from the regulated unit, respectively (Haley & Aldrich, 2010b). Groundwater samples are analyzed for the following analytes:
 - Semiannual regulated-unit-specific contaminants of concern (COCs) at detection and POC monitoring wells
 - Annual regulated-unit-specific COCs at background monitoring wells
 - Annual background parameters at detection and background monitoring wells
 - Annual Appendix IX constituents at POC monitoring wells
- Evaluation Monitoring Program. Evaluation monitoring locations are selected to provide data from the
 uppermost aquifer that can be used to evaluate potential changes in groundwater quality directly
 related to releases from the regulated unit. Wells are characterized as evaluation monitoring wells or
 evaluation monitoring-affected media wells (Haley & Aldrich, 2010b). Groundwater samples collected
 are analyzed for the following analytes:
 - Semiannual regulated-unit-specific COCs at evaluation monitoring wells
 - Annual Appendix IX constituents at evaluation monitoring wells in affected media
- CAIM Program. Designated CAIM wells that are connected to the treatment system are scheduled to be sampled and analyzed for regulated unit COCs semiannually if sufficient groundwater is present (Haley & Aldrich, 2010b). When groundwater samples are collected from active CAIM wells (on a semiannual basis), they are analyzed for the regulated-unit COCs. No CAIM extraction wells connected to a treatment system were active during the third quarter 2016. Because no groundwater extraction occurred in the third quarter 2016, no wells were sampled for the CAIM Program.

2.3.2 Sitewide Monitoring Program

There are no wells from the Sitewide Monitoring Program scheduled for groundwater quality sampling during third quarter; however, 142 stations are included for quarterly water level monitoring (Haley & Aldrich, 2010c). Twenty-two monitoring stations (SP-881A through D; SP-881G; SP-882A through SP-882D; SP-882G; SP-890A through SP-890D; SP-890G; SP-29A through SP-29C; and SP-33A through SP-33C) were gauged during the third quarter 2016 water level monitoring event in addition to the wells included in the Sitewide Monitoring Program.

2.4 Seeps in the Vicinity of Well WS-09A

The groundwater extraction and treatment system was discontinued following an aquifer test performed at RD-10 on April 18, 2013 (Hargis and Associates, 2016). Until approval from the DTSC is obtained, well WS-09A will remain inactive. As a result, seeps in the vicinity of well WS-09A were inspected during the third quarter 2016 to evaluate whether operational downtime has resulted in accumulation of water at the surface near these seeps; Appendix A contains the status report from July 2016 through September 2016. No water was extracted from well WS-09A during the third quarter 2016.

Seeps FDP-881, FDP-882, and FDP-890 were part of a weekly inspection conducted by Boeing and NASA and were monitored during the third quarter 2016. Zero gallons were pumped from FDP-881, FDP-882, and FDP-890 (Hargis and Associates, 2016).

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Results

3.1 Groundwater Elevations

Groundwater level elevations are provided in Table 2-3. Groundwater elevations are affected by inflow (such as local precipitation) and outflow components (such as groundwater extraction) of the water budget. Contours of the static non-perched groundwater elevations, generated from groundwater levels measured during the third quarter 2016 (July 11 to 14) are illustrated on Figure 2-1. This interpretation was developed in conjunction with the other SSFL stakeholders. Groundwater levels presented on Figure 2-1 include data for wells not included in Table 2-3 (i.e. for Boeing and/or DOE wells in Areas I, III, and/or IV) to provide a context for the shape of the groundwater elevation contours in NASA Areas I and II. The groundwater elevation contours were developed using topographic information and historical groundwater level data for wells and piezometers not gauged during the third quarter 2016 and by recognizing that groundwater level discontinuities coincide with certain fault segments and other geologic structures.

Non-perched Chatsworth Formation groundwater elevations measured in onsite SSFL monitoring wells during the third quarter 2016 ranged from approximately 1,374 feet National Geodetic Vertical Datum of 1929 (NGVD29) at Port 3 of RD-56A (Flexible Liner Underground Technologies [FLUTe] well) to approximately 1,871 feet NGVD29 at well RD-42 (Table 2-3).

The groundwater elevation contour map presented on Figure 2-1 is provided to satisfy, in part, the requirements of 22 *California Code of Regulations* (CCR) Section 66264.97 for evaluating groundwater flow rates and directions. A groundwater elevation contour map can be used in simple hydrogeologic settings to depict variations in the elevation of the groundwater table surface, which in turn can be used to interpret apparent relative directions of groundwater flow. However, the groundwater elevation contours depicted on Figure 2-1 are not intended to be used to infer groundwater flow directions or rates of groundwater movement in light of the hydrogeologic complexities at SSFL (MWH, 2013).

3.2 Groundwater Quality

The groundwater analytical results presented in this subsection are compared to multiple screening levels for discussion purposes. These groundwater screening reference values are provided in Table 3-1 (22 CCR Sections 64431 and 64444; California State Water Resources Control Board, 2015; *Federal Register*, 2000; EPA, 2009; van den Berg, et al., 2006). Groundwater quality analytical results for groundwater samples are provided in Table 3-2 (detects only) and Table 3-3 (all validated analytical results). Groundwater quality analytical results for constituents that were detected for the first time at a given well at SSFL are summarized in Table 3-4. Laboratory data usability assessments (DUAs) and data summary reports are included in Appendix B. Groundwater quality parameters were documented prior to sample collection; the final readings at each well taken prior to sample collection are summarized in Table 2-6. Specific results of interest are discussed in the following subsections.

Aside from the first-time detections shown in Table 3-4 and the historical maximum exceedances discussed below, the remaining analytical results were found to be within historical ranges.

3.2.1 Analytical Results

A total of 46 stations were scheduled for sampling in the third quarter 2016; 14 of these stations were dry or contained an insufficient amount of groundwater to collect a sample and 6 wells were not sampled because of pumping inactivity. These exceptions to the wells scheduled for monitoring in the third quarter 2016 are summarized in Table 2-1.

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3.2.1.1 Onsite Detections

SSFL annual groundwater monitoring reports include lateral extent maps that show the areas of impacted groundwater for 11 chemicals. These chemicals are selected for mapping because they are COCs in the PCP Regulated Unit Monitoring Program and/or the Site-Wide Monitoring Program, exceeded screening levels in three or more locations in recent data, and chemicals detected at concentrations exceeding screening values at three or more locations historically. Detected concentrations exceeding the respective screening levels of these 11 chemicals during the third quarter 2016 are summarized below.

Wells sampled during the third quarter 2016 were located onsite, with the exception of SP-29B, RD-68A, and RD-68B, which are discussed in Section 3.2.1.2. Trichloroethene (TCE) was detected in 11 of 22 wells. Detected concentrations exceeded the 5 micrograms per liter (μ g/L) federal Maximum Contaminant Level (MCL) at six of these locations. TCE concentrations above the MCL ranged from 8.1 μ g/L (RD-41B) to 490 μ g/L (HAR-07). cis-1,2-Dichloroethene (DCE) was detected in 12 of 22 wells, with concentrations exceeding the 6 μ g/L California MCL at 11 of these wells. Elevated concentrations ranging from 15 μ g/L (HAR-08) to 2,900 μ g/L (HAR-07). Vinyl chloride was detected in 9 of 22 wells sampled in the third quarter 2016, with concentrations exceeding the California MCL of 0.5 μ g/L at 8 wells. Concentrations exceeding the California MCL ranged from 0.52 μ g/L (SP-890C) to 130 μ g/L (HAR-07). trans-1,2-DCE was detected in 11 of 22 onsite wells sampled. Detected concentrations exceeded the 10 μ g/L California MCL at 7 wells. Concentrations of trans-1,2-DCE above the MCL ranged from 12 μ g/L (HAR-20 and HAR-21) to 270 μ g/L (HAR-07). 1,1-DCE was detected in 4 of 22 onsite wells sampled. Concentrations in one well exceeded the MCL of 6 μ g/L (9.7 J μ g/L at HAR-07). Formaldehyde was detected in 8 of 13 onsite wells sampled. Concentrations in one well exceeded the notification level of 100 μ g/L (120 μ g/L at WS-04A).

Semivolatile Organic Compound (SVOC) NDMA was detected in 5 of 20 onsite wells sampled. Concentrations exceeded the notification level of 0.01 μ g/L at 4 of these wells. Elevated concentrations ranging from 0.012 (HAR-08) to 0.019 μ g/L (HAR-07). Nine of 23 onsite wells sampled had detected concentrations of 1,4-dioxane. Concentrations exceeded the notification level of 1 μ g/L at three of these wells. Detected concentrations exceeding the notification level ranged from 1.2 (HAR-21) to 2.7 μ g/L (HAR-11).

Diesel range organics (DROs) were detected at 6 wells with concentrations exceeding the taste/odor threshold of 100 μ g/L at two wells. Elevated concentrations ranged from 130 μ g/L (HAR-11) to 790 μ g/L (HAR-20). Gasoline range organics (GROs) were detected in two wells, HAR-21 (53 μ g/L) and HAR-07 (200 μ g/L) exceeding the taste/odor threshold of 5 μ g/L.

General chemistry parameters fluoride and nitrate were not detected above their respective screening levels at onsite wells during the third quarter 2016.

New Maximum Historical Detections

Validated analytical results were compared to historical data following the third quarter groundwater sampling event to determine if new maximum detections were found. Five wells contained four analytes that were detected at concentrations exceeding both historical maximum values and their respective screening levels during third quarter 2016. The following discussion focuses on constituents for which new historical maximum concentrations exceeded the respective screening levels.

Alfa Area—During the third quarter, DRO (C8-C30) was detected above the taste/odor threshold of 100 μ g/L at a new maximum historical level of 790 μ g/L at monitoring well HAR-20. This detection was reported at a level more than twice the respective screening criteria and has been detected at this location prior to the third quarter 2016 with a previous maximum detection of 710 μ g/L.

Coca Area—Strontium was detected above the SSFL comparison level of 0.8 mg/L at new maximum historical level of 1.01 milligrams per liter (mg/L) at monitoring well RD-41B. Strontium has been detected at this location prior to the third quarter 2016 with a previous maximum detection of 0.904 mg/L.

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Southern Buffer Zone Area–NDMA was detected above the Notification Level of $0.01~\mu g/L$ at a new maximum historical level of $0.013~\mu g/L$ at monitoring well RD-05B. NDMA has been detected at this location prior to the third quarter 2016 with a previous maximum detection of $0.0049~\mu g/L$.

trans-1,2-DCE was detected above the California MCL of 10 μ g/L at new maximum historical level of 24 μ g/L at SP-890C and SP-890G. This detection was reported at a level more than twice the respective screening criteria and has been detected at these locations prior to the third quarter 2016 with previous maximum detections of 20 μ g/L and 22 μ g/L, respectively.

First-time Detections

Area 1 (Former LOX Plant Area) – Butyl benzyl phthalate was detected below the sitewide groundwater risk-based screening level (SWGW RBSL) for the first time at WS-04A with an estimated concentration of 0.077 J μ g/L. This detection was found in the field duplicate sample, and was not detected in the surrogate sample.

Alfa Area— Isopropanol was detected for the first time at monitoring well HAR-11 below the taste/odor threshold of 160,000 μ g/L at a concentration of 170 μ g/L.

Dimethyl phthalate was detected for the first time at monitoring well HAR-20 below the SWGW RBSL of 130,000 µg/L at an estimated concentration of 0.045 J µg/L.

Di-n-butyl phthalate and perchlorate were detected for the first time at monitoring well RD-49C below the SWGW RBSL of 1,300 μ g/L and California MCL of 6 μ g/L, respectively. Di-n-butyl phthalate was detected at an estimated concentration of 0.12 J μ g/L and perchlorate was detected at a concentration of 3.4 μ g/L.

Bravo Area— Isopropanol and butyl benzyl phthalate were detected for the first time at monitoring well HAR-19 below the taste/odor threshold of 160,000 μ g/L and SWGW RBSL of 78 μ g/L, respectively. Isopropanol was detected at an estimated concentration of 61 J μ g/L and butyl benzyl phthalate was detected at an estimated concentration of 0.11 J μ g/L.

GROs (C4-C12) were detected for the first time at monitoring well HAR-21 exceeding the taste/odor threshold of 5 μ g/L at a concentration of 53 μ g/L.

Southern Buffer Zone Area— Isopropanol was detected for the first time at seep wells SP-881C, SP-890C, and SP-890G below the taste/odor threshold of 160,000 μ g/L at an estimated concentration of 88 J μ g/L (SP-890C and SP-890G) and concentration of 160 μ g/L at SP-881C.

Storable Propellant Area– Isopropanol was detected for the first time at monitoring well HAR-05 below the taste/odor threshold of 160,000 μ g/L at an estimated concentration of 75 J μ g/L.

3.2.1.2 Offsite Wells and Detections

Monitoring wells RD-68A and RD-68B and seep well SP-29B are the only wells located offsite that were sampled during the third quarter 2016. These wells are artesian, with hydrostatic heads above the ground surface. During the third quarter 2016 groundwater sampling event, there were no detections of TCE, vinyl chloride, trans-1,2-DCE, or cis-1,2-DCE. Fluoride was detected above the SSFL comparison level of 0.8 mg/L at RD-68B and SP-29B at concentrations of 0.97 mg/L and 4.8 mg/L, respectively.

New Maximum Historical Detections

Validated analytical results were compared to historical data following the third quarter groundwater sampling event to determine if new maximum detections were found. One well and one analyte was detected at a maximum historical value above its respective screening level during third quarter 2016. The following discussion focuses on constituents for which new historical maximum concentrations exceeded the respective screening levels.

Offsite Artesian Well–During the third quarter, fluoride was detected above the SSFL comparison level of 0.8 mg/L at a new maximum historical level of 4.8 mg/L at seep well SP-29B. This detection was reported at

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a level more than twice the respective screening criteria and has been detected at this location prior to the third quarter 2016 with a previous maximum detection of 4.4 mg/L.

First-time Detections

Offsite Artesian Wells—Dimethyl phthalate was detected at RD-68B for the first time during third quarter 2016 at an estimated concentration of 0.39 J μ g/L, which is below the SWGW RBSL of 130,000 μ g/L.

Seep Well Radionuclide Analytical Summary

Samples collected from SP-29B were submitted for radionuclide analysis during third quarter 2016. Nine individual radionuclides were detected, for which there are screening criteria for only five of these analytes (gross alpha, gross beta, gross beta-decanted, uranium-233/234, and uranium-238). Of the detected radionuclides, all were detected below their respective screening criteria, where criteria were available.

Analytical results for the third quarter indicated that the remaining identified COCs were nondetect or below the screening criteria at these locations.

3.3 Field Quality Assurance

3.3.1 Groundwater Level Monitoring

During the third quarter 2016 sampling event, a total of 164 gauging locations consisting of groundwater monitoring wells, piezometers, seep well clusters, and seep pools were scheduled for groundwater level monitoring. Of these, all 164 stations (100 percent) were monitored during third quarter 2016.

Percent Completeness Summary

Groundwater Level Monitoring	Third Quarter 2016
Number of locations scheduled	164
Number of locations monitored	164
Percent completeness	100%

The percent completeness (% C) listed in this summary was calculated using the following equation:

% C = <u>Number of Valid (Usable) Measurements</u> X 100 Number of Measurements Planned

3.3.2 Groundwater Monitoring

During the third quarter 2016 event, 46 stations were scheduled to be sampled. Of these, 26 stations (56.5 percent) were sampled. Samples could not be collected at a number of these locations because the wells and/or piezometers were either dry or did not contain an adequate amount of groundwater for sampling purposes, or they were associated with inactive treatment systems and did not require sampling under the CAIM program. Therefore, a sampling completeness of 100 percent was achieved for the wells that could be sampled versus those that were scheduled or planned to be sampled during the third quarter 2016.

3.3.3 Quality Assurance/Quality Control Sample Collection

The quality assurance (QA)/QC sample collection targets are listed in the WQSAP (Haley & Aldrich, 2010c). During the third quarter 2016, the QA/QC sample collection targets were met except where wells contained an inadequate amount of groundwater for sampling.

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The following chart summarizes the QA/QC samples collected and their completeness. The overall QA/QC project goal of 90 percent was exceeded:

Percent Completeness for QA/QC Sample Collection

QC Sample Type	Site-Wide WQSAPa
EBs	100%
FBs	100%
FDs	100%
MS/MSD	100%
TBs	100%

^a Haley & Aldrich, Inc., 2010c

FD = field duplicate

MS = matrix spike

MSD = matrix spike duplicate

QC = quality control

TB = trip blank

WQSAP = Water Quality Sampling and Analysis Plan

3.3.4 Groundwater Quality Parameter Measurements

Groundwater quality field parameters (pH, oxidation-reduction potential, dissolved oxygen, conductivity, temperature, and turbidity) were collected according to the Site-Wide WQSAP (Haley & Aldrich, 2010c). Table 2-1 summarizes the exceptions for the third quarter 2016. Groundwater quality field parameters were documented during groundwater purging and prior to sample collection at each well location; Table 2-6 provides a summary of the final parameter readings collected at each well for the third quarter 2016.

3.3.5 Analytical Data

The DUA and laboratory analytical reports for the third quarter 2016 reporting period are provided in Appendix B. The laboratories used for this program are certified by the California Department of Public Health Environmental Laboratory Accreditation Program. The DUA in Appendix B includes a summary of laboratory performance and precision.

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EB = equipment blank

FB = field blank

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SECTION 4

Scheduled Follow-up Work

Piezometer PZ-060 was scheduled to be sampled during third quarter 2016. When this location was approached, the total depth of the well was measured to be less than 0.5 ft below the depth to static water level water measurement and was unable to be sampled. This location will be scheduled for re-development prior to the first quarter 2017 groundwater sampling event to attempt to remove a possible silt build-up or other blockage near the bottom of this piezometer.

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SECTION 5

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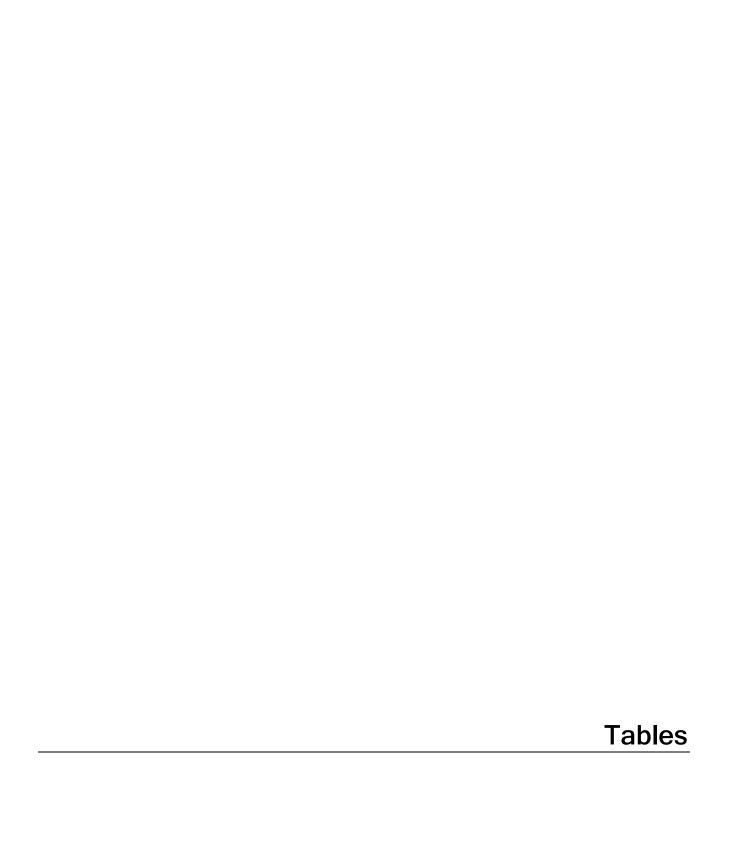
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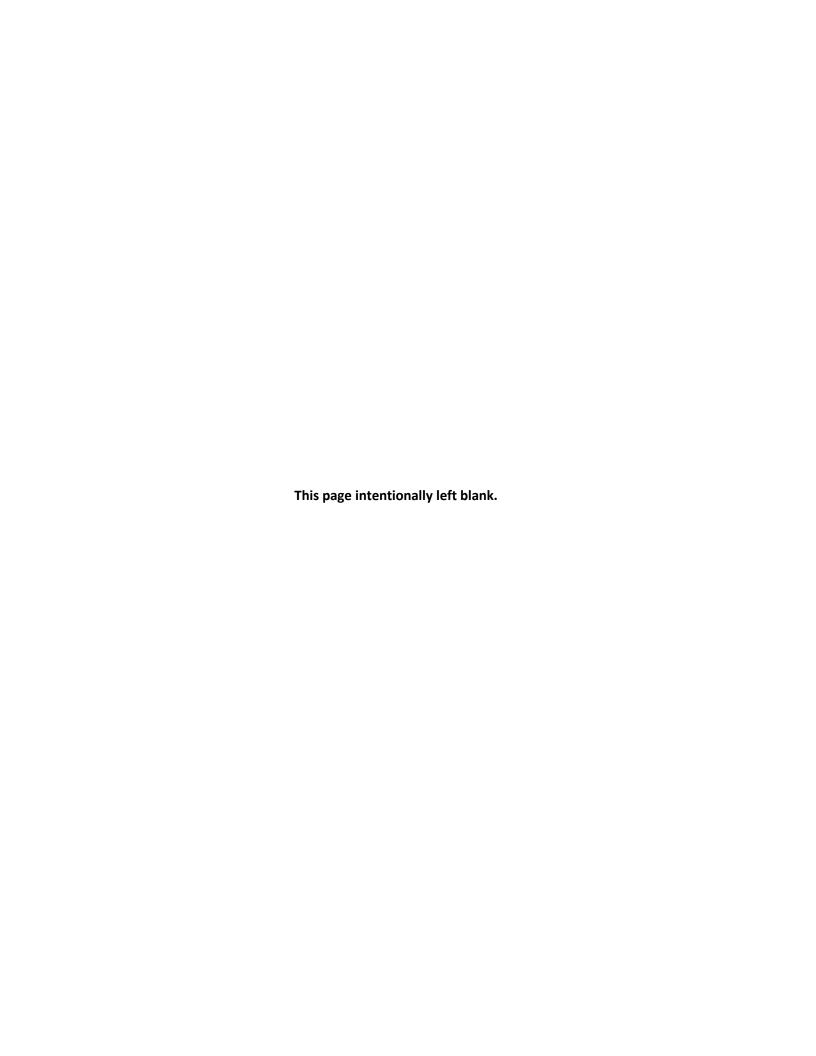


TABLE 1-1

Wells and Monitoring Programs

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

		Post-Closure Permit I	Regulate	d Unit	Monito	ring Pr	ogram			Site	wide Monitoring	Program	Seeps	and Springs Moni	toring
Well ID	Permit for	Regulated Unit	POC	Bkgd	DM	EM	EM (aff)	CAIM	CAIM Status	Sampling Program	Area of Impacted Groundwater	Water Level Monitoring Program	Groundwater Sampling	Area of Impacted Groundwater	Water Level Monitoring Program
ES-21	Area II	Other Extraction Wells						Х	not active		6, 7	X			
ES-22	Area II	Other Extraction Wells						Χ	not active		6, 7	Χ			
FDP-882													X	9	X
FDP-890										Х	9	Х			
HAR-05	Area II	SPA-1, SPA-2				Χ					8	Х			
HAR-07	Area II	Delta				Χ	Χ	Х	not active		9	Х			
HAR-08	Area II	Delta				Χ	Χ				9	Х			
HAR-09	Area II	ABSP	Х		Χ	Χ	Χ				8	Х			
HAR-11	Area II	ABSP				Χ	Х				8	Х			
HAR-12	Area II	SPA-1			Χ	Χ	Х				8	Х			
HAR-13	Area II	SPA-1		Х							8	Х			
HAR-14	Area II	SPA-1	Х		Χ	Χ	Х				8	Х			
HAR-15	Area II	SPA-2				Χ	Х				8	Х			
HAR-19	Area II	ABSP			Χ	Χ	Х				8	Х			
HAR-20	Area II	ABSP				Χ	Х				8	Х			
HAR-21	Area II	ABSP				Χ	Χ				8	Х			
HAR-23	Area II	SPA-1, SPA-2				Χ					8	Х			
HAR-27	Area II	Delta	Х		Χ	Χ	Х				9	Х			
HAR-28	Area II	Delta			Χ	Χ	Х				9	Х			
HAR-29	Area II	Delta			Χ	Χ	Х				9	Х			
HAR-30	Area II	SPA-2			Χ	Χ	Х				8	Х			
HAR-31	Area II	SPA-2		Х							8	Х			
PZ-059	Area II	ABSP		Х							8	Х			
PZ-060	Area II	ABSP				Χ	Χ				8	Х			
PZ-070	Area II	ABSP				Χ	Х				8	Х			
PZ-095										Х	5	Х			
RD-04	Area II	Other Extraction Wells						Х	not active		8	Х			
RD-05A	Area II	Delta				Χ				Х	9	Х			
RD-05B	Area II	Delta				Χ				Х	9	Х			
RD-05C	Area II	Delta				Χ				Х	9	Х			
RD-09	Area II	Other Extraction Wells						Х	not active		6, 7	Х			
RD-40										Х	9	Х			
RD-41A	Area II	Delta		Χ							9	Х			
RD-41B										Х	9	Х			
RD-42										Х	9	Х			
RD-49A	Area II	ABSP		Χ							8	Х			
RD-49B	Area II	ABSP		Χ							8	Х			
RD-49C	Area II	ABSP				Х	Χ				8	Х			
RD-56A	1									Χ	6, 7	Х			
RD-56B	İ		1	i –			1			Х	6, 7	X			

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TABLE 1-1

Wells and Monitoring Programs

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

		Post-Closure Permit	Regulate	d Unit	Monito	ring Pr	ogram			Site	wide Monitoring I	Program	Seeps	and Springs Moni	toring
Well ID	Permit for	Regulated Unit	POC	Bkgd	DM	EM	EM (aff)	CAIM	CAIM Status	Sampling Program	Area of Impacted Groundwater	Water Level Monitoring Program	Groundwater Sampling	Area of Impacted Groundwater	Water Level Monitoring Program
RD-68A	Area II	ABSP				Χ				Х	6, 7	Х			
RD-68B	Area II	ABSP				Χ				Х	6, 7	Х			
RD-69										Х	5	Х			
RD-70										Х	6, 7	Х			
RD-81										Х	5	Х			
RD-83										Х	5, 6	Х			
RD-104 ^a	Area II	ABSP	Х		Χ	Χ	Χ				8	Х			
RS-08	Area II	ABSP				Χ	Χ				8	Х			
RS-10	Area II	Delta		Х							9	X			
RS-34 ^b	Area II	SPA-2	Х		Х	Х	Х				8	Х			
SP-29A													Х		Х
SP-29B													Х		Х
SP-29C													X		X
SP-33A													X	6, 7	X
SP-33B													X	6, 7	X
SP-33C													X	6, 7	X
SP-881C													X	9	Х
SP-881G													Χ	9	X
SP-882B													Χ	9	X
SP-882G													X	9	X
SP-890C													X	9	Х
SP-890G													X	9	Х
WS-04A	Area II	ABSP				Χ				Χ	5	X			
WS-09	Area II	Other Extraction Wells						Χ	not active		8	X			
WS-09A	Area II	Other Extraction Wells						Χ	not active	Х	9	X			

^a This well identification number (ID) has been changed, the previous well identifier was PC-02.

aff = affected mediaDM = detection monitoringBkgd = backgroundEM = evaluation monitoringCAIM = corrective action interim measurePOC = point of compliance

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^b This well ID has been changed, the previous well identifier was PC-03.

TABLE 2-1 **Exceptions to the Groundwater Quality Sampling and Analysis Plans**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Exception Description	Well Identifier	Notes
Scheduled Stations that were not sampled	FDP-882, HAR-12, HAR-15, HAR-28, HAR-29, HAR-30, PZ-070, RD-104, RS-08, RS-34	These sampling locations were dry or contained only end cap water suspended in the sump of the well.
	PZ-060	Insufficient amount of water column observed in this well prior to sampling. Total depth was measured to be less than 0.5 ft below the depth to static water level measurement possibly due to a silt build-up at the bottom of the well and was unable to be sampled. This location will be scheduled for re-development to attempt to remove the blockage at the bottom of the well.
	HAR-27	Insufficient amount of water observed above the pump intake prior to sampling.
	HAR-09, HAR-14	Water levels were observed below the pump intake prior to sampling.
Stabilization criteria not met	SP-882G	Drawdown exceeded 0.3 ft during low-flow purging at this location. The purge rate was set at the lowest targeted rate of 100 mL per minute guideline.
	HAR-20	Drawdown exceeded 0.3 ft during the initial low-flow purging at this location. Purge rates were within the targeted 100 to 500 mL per minute guidelines. The depth to water level stabilized after the system volume was removed, and did not change while purging the well.
Wells not scheduled to be sampled due to inactivity		These wells are part of the PCP and are scheduled to be sampled during the third quarter of 2016 sampling event if they are actively pumping. These wells were not active during the third quarter of 2016.

ft = foot (feet)

mL = milliliter(s)

PCP = Post Closure Permit

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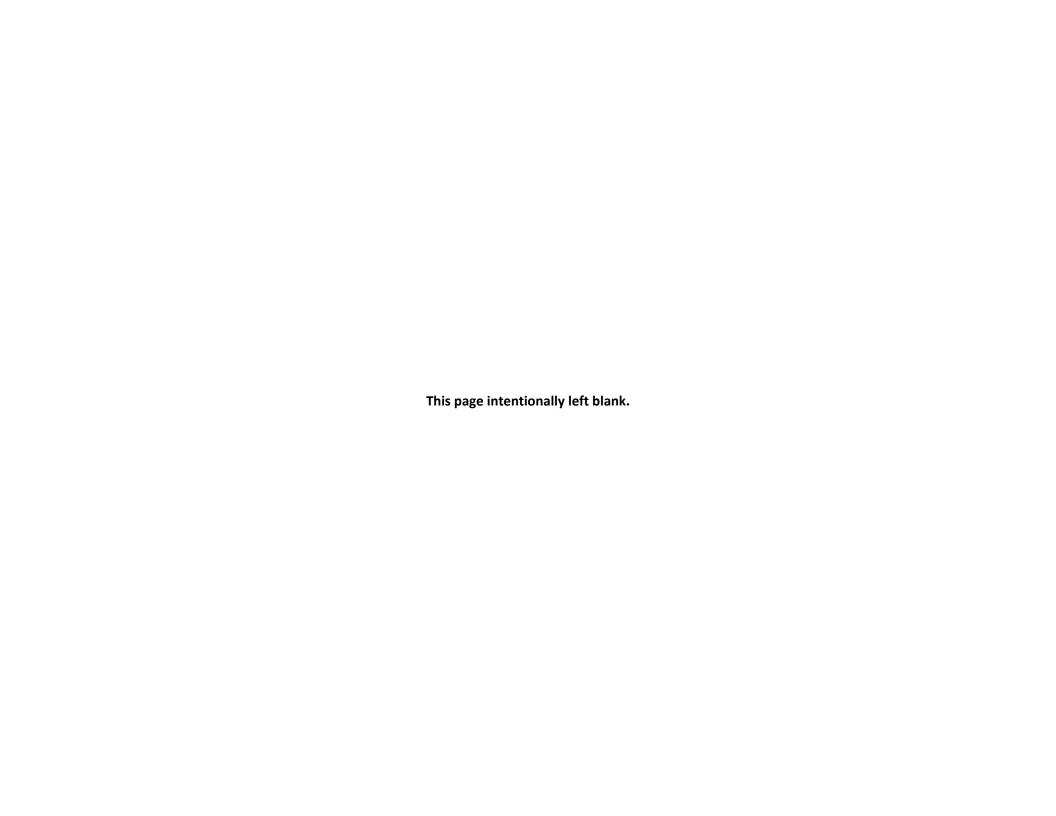


TABLE 2-2

New Surveyed Monitoring Point Elevations

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

	Previous Monitoring	New Surveyed Monitoring	Monitoring Point	
	Point Elevation	Point Elevations	Elevation Change	
Well ID	(feet NGVD29)	(feet NGVD29)	(feet)	Comment
C-7-1	1831.03	1831.54	0.51	Open corehole C-7 located on the helipad in B204/ELV AIG was converted to a
				FLUTe multiport well, this is the new elevation for Port 1.
C-7-2	1831.06	1831.57	0.51	Open corehole C-7 located on the helipad in B204/ELV AIG was converted to a
				FLUTe multiport well, this is the new elevation for Port 2.
C-7-3	1831.12	1831.63	0.51	Open corehole C-7 located on the helipad in B204/ELV AIG was converted to a
				FLUTe multiport well, this is the new elevation for Port 3.
HAR-08	1730.98	1731.22	0.24	New dedicated bladder pump was installed; final moitoring point was resurveyed.
HAR-19	1833.52	1833.28	-0.24	New dedicated bladder pump was installed; final moitoring point was resurveyed.
PZ-021	1755.69	1758.97	3.28	Resurvey of monitoring point elevation following riser repairs.
PZ-125	1780.25	1783.39	3.14	Resurvey of monitoring point elevation following riser repairs.
RD-40	1972.22	1972.05	-0.17	New dedicated bladder pump was installed; final moitoring point was resurveyed.
RD-41A	1774.61	1773.71	-0.90	New dedicated bladder pump was installed; final moitoring point was resurveyed.
RD-56A-1	1757.66	1758.18	0.52	Open borehole monitoring well RD-56A located north of the Building 204 Area was
22.564.2	4777.60	1750.01	0.50	converted to a FLUTe multiport well, this is the new elevation for Port 1.
RD-56A-2	1757.69	1758.21	0.52	Open borehole monitoring well RD-56A located north of the Building 204 Area was
RD-56A-3	1757.00	1750.20	0.52	converted to a FLUTe multiport well, this is the new elevation for Port 2.
KD-56A-3	1757.68	1758.20	0.52	Open borehole monitoring well RD-56A located north of the Building 204 Area was
DD ECD	1761 17	1761.24	0.16	converted to a FLUTe multiport well, this is the new elevation for Port 3.
RD-56B	1761.47	1761.31	-0.16	New dedicated bladder pump was installed; final moitoring point was resurveyed.
RD-69	1831.23	1831.03	-0.20	New dedicated bladder pump was installed; final moitoring point was resurveyed.
RD-80	1740.18	1739.88	-0.30	New dedicated bladder pump was installed; final moitoring point was resurveyed.
WS-04A	1750.94	1750.99	0.05	New dedicated bladder pump was installed; final moitoring point was resurveyed.

These monitoring point elevations were surveyed based on the North American Datum of 1927 (horizontal datum) and the National Geodetic Vertical Datum of 1929 (NGVD29).

AIG = area of impacted groundwater

B204/ELV = Building 204/Expendable Launch Vehicle

FLUTe = Flexible Liner Underground Technology

ID = identification number

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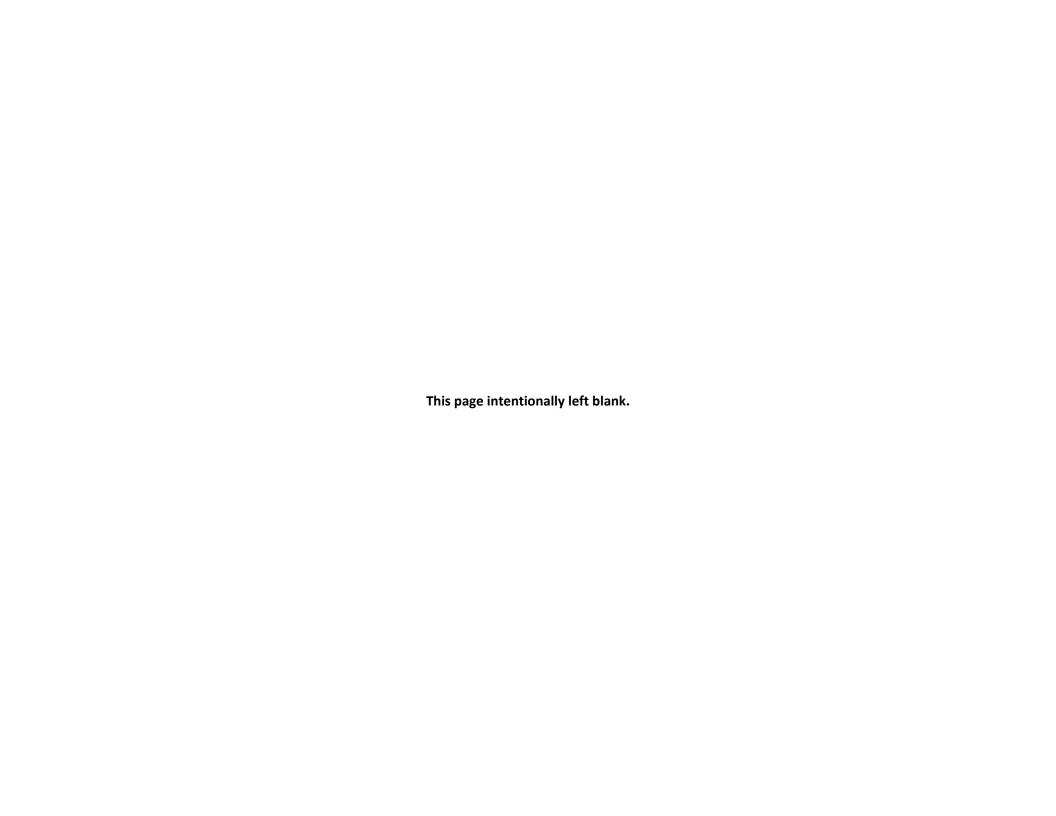


TABLE 2-3 **Groundwater Level Data**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

M-11 - 12	Groundwater-bearing	Monitoring Point Elevation	Depth to Groundwater	Static Groundwater Level Elevation	Date of
Well ID	Zone	(feet NGVD29)	(feet BTOC)	(feet NGVD29)	Measurement
C-7-1	Chatsworth	1831.54	174.59	1656.95	7/11/2016
C-7-2	Chatsworth	1831.57	179.37	1652.20	7/11/2016
C-7-3	Chatsworth	1831.63	179.18	1652.45	7/11/2016
S-18	Shallow	1770.25	Dry	-	7/13/2016
S-19	Shallow	1769.44	Dry	-	7/13/2016
ES-20	Shallow	1770.58	Dry	-	7/13/2016
ES-21	Shallow	1769.62	36.88	1732.74	7/13/2016
ES-22	Shallow	1770.93	Dry	-	7/13/2016
FDP-882	Natural Spring	-	Dry	-	7/12/2016
FDP-890	Natural Spring	-	Dry	-	7/12/2016
HAR-05	Chatsworth	1812.72	55.45	1757.27	7/12/2016
HAR-06	Chatsworth	1815.19	53.49	1761.70	7/12/2016
HAR-07	Chatsworth	1728.72	81.52	1647.20	7/11/2016
HAR-08	Chatsworth	1731.22	65.66	1665.56	7/11/2016
HAR-09	Shallow	1821.42	29.42	1792.00	7/11/2016
HAR-11	Shallow	1827.78	27.25	1800.53	7/11/2016
HAR-12	Shallow	1797.23	Dry	-	7/12/2016
HAR-13	Shallow	1801.09	Dry	-	7/12/2016
HAR-14	Shallow	1796.91	38.41	1758.50	7/12/2016
HAR-15	Shallow	1809.57	Dry	-	7/12/2016
HAR-19	Chatsworth	1833.28	193.32	1639.96	7/11/2016
HAR-20	Chatsworth	1830.76	190.33	1640.43	7/11/2016
HAR-21	Chatsworth	1821.42	29.92	1791.50	7/11/2016
HAR-22	Chatsworth	1816.62	59.55	1757.07	7/13/2016
HAR-23	Chatsworth	1806.13	44.98	1761.15	7/12/2016
HAR-27	Shallow	1719.28	39.07	1680.21	7/11/2016
HAR-28	Shallow	1720.06	Dry	-	7/11/2016
HAR-29	Shallow	1724.04	Dry	-	7/11/2016
HAR-30	Shallow	1807.05	Dry	-	7/12/2016
HAR-31	Shallow	1812.32	Dry	-	7/12/2016
PZ-001A	Shallow	1768.50	Dry	-	7/13/2016
PZ-001B	Shallow	1768.50	Dry	-	7/13/2016
PZ-001C	Shallow	1768.50	Dry	-	7/13/2016
PZ-001D	Shallow	1768.50	Dry	-	7/13/2016
PZ-001E	Shallow	1768.50	50.74	1717.76	7/13/2016
PZ-001F	Shallow	1768.50	50.56	1717.94	7/13/2016
PZ-007A	Shallow	1771.84	Dry	-	7/13/2016
PZ-007B	Shallow	1771.84	Dry	_	7/13/2016
PZ-007B	Shallow	1771.84	Dry	-	7/13/2016
PZ-007C PZ-007D	Shallow	1771.84	Dry		7/13/2016
	 		-	-	
PZ-007E	Shallow	1771.84	Dry	-	7/13/2016
PZ-007F	Shallow	1771.84	Dry	-	7/13/2016
PZ-007G	Shallow Shallow	1771.84 1761.44	Dry Dry	-	7/13/2016 7/13/2016

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TABLE 2-3 **Groundwater Level Data**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

	Groundwater-bearing	Monitoring Point Elevation	Depth to Groundwater	Static Groundwater Level Elevation	Date of
Well ID	Zone	(feet NGVD29)	(feet BTOC)	(feet NGVD29)	Measurement
Z-009B	Shallow	1761.44	Dry	-	7/13/2016
Z-009C	Shallow	1761.44	Dry	-	7/13/2016
Z-009D	Shallow	1761.44	Dry	-	7/13/2016
PZ-009E	Shallow	1761.44	Dry	-	7/13/2016
PZ-009F	Shallow	1761.44	Dry	-	7/13/2016
PZ-010A	Shallow	1767.80	Dry	-	7/13/2016
PZ-010B	Shallow	1767.80	Dry	-	7/13/2016
PZ-010C	Shallow	1767.80	Dry	-	7/13/2016
PZ-010D	Shallow	1767.80	Dry	-	7/13/2016
PZ-010E	Shallow	1767.80	Dry	-	7/13/2016
PZ-010F	Shallow	1767.80	Dry	-	7/13/2016
PZ-010G	Shallow	1767.80	Dry	-	7/13/2016
PZ-019	Shallow	1776.77	31.77	ECW	7/13/2016
PZ-020	Shallow	1776.44	32.40	ECW	7/13/2016
PZ-021	Shallow	1758.97	Dry	-	7/13/2016
PZ-022	Shallow	1774.44	Dry	-	7/13/2016
PZ-056	Shallow	1805.86	30.19	ECW	7/13/2016
PZ-059	Shallow	1836.67	24.92	ECW	7/11/2016
PZ-060	Shallow	1868.90	48.38	1820.52	7/11/2016
PZ-062	Shallow	1716.57	Dry	-	7/14/2016
PZ-070	Shallow	1834.61	26.75	ECW	7/11/2016
PZ-073	Shallow	1760.54	Dry	-	7/11/2016
PZ-095	Shallow	1760.02	27.60	ECW	7/13/2016
PZ-114	Shallow	1818.19	50.09	ECW	7/13/2016
PZ-115	Shallow	1817.81	Dry	-	7/13/2016
PZ-125	Shallow	1783.39	Dry	-	7/13/2016
PZ-128	Shallow	1757.26	Dry	-	7/13/2016
PZ-129	Shallow	1741.94	29.99	ECW	7/13/2016
PZ-130	Shallow	1746.66	Dry	-	7/13/2016
PZ-131	Shallow	1759.95	29.66	ECW	7/13/2016
PZ-132	Shallow	1758.38	Dry	-	7/13/2016
PZ-133	Shallow	1798.48	Dry	_	7/13/2016
PZ-134	Shallow	1821.59	79.32	ECW	7/13/2016
PZ-135	Shallow	1823.84	90.05	ECW	7/13/2016
PZ-136	Shallow	1812.90	77.54	ECW	7/13/2016
PZ-130	Shallow	1810.13	79.85	ECW	7/13/2016
PZ-137 PZ-139	Shallow	1810.13	52.43	1779.48	7/13/2016
	Shallow	1831.91	23.08		7/14/2016
PZ-140				1809.74	
PZ-141	Shallow	1856.58	9.03	1847.55	7/14/2016
PZ-142	Shallow	1745.13	40.71	ECW	7/13/2016
PZ-143	Shallow	1849.84	Dry	-	7/14/2016
PZ-144	Shallow	1859.13	19.94	1839.19	7/14/2016
PZ-145	Shallow	1766.87	32.58	ECW	7/13/2016
PZ-146	Shallow	1789.82	24.51	ECW	7/13/2016

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TABLE 2-3 **Groundwater Level Data**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Well ID	Groundwater-bearing Zone	Monitoring Point Elevation (feet NGVD29)	Depth to Groundwater (feet BTOC)	Static Groundwater Level Elevation (feet NGVD29)	Date of Measurement
PZ-147	Shallow	1791.24	39.16	ECW	7/13/2016
PZ-148	Shallow	1794.71	Dry	-	7/13/2016
PZ-149	Shallow	1715.19	Dry	-	7/11/2016
PZ-151	Shallow	1862.60	79.58	ECW	7/13/2016
PZ-152	Shallow	1880.80	36.27	ECW	7/14/2016
PZ-153	Shallow	1908.10	65.32	ECW	7/11/2016
PZ-154	Shallow	1902.30	Dry	-	7/11/2016
PZ-155	Shallow	1831.90	61.82	ECW	7/11/2016
PZ-156	Shallow	1849.40	Dry	-	7/11/2016
PZ-157	Shallow	1809.98	Dry	-	7/13/2016
PZ-158	Shallow	1797.40	Dry	-	7/12/2016
PZ-159	Shallow	1814.20	Dry	-	7/11/2016
RD-04	Chatsworth	1883.93	261.29	1622.64	7/11/2016
RD-05A	Chatsworth	1704.78	82.16	1622.62	7/12/2016
RD-05B	Chatsworth	1706.19	66.67	1639.52	7/12/2016
RD-05C	Chatsworth	1705.27	49.82	1655.45	7/12/2016
RD-09	Chatsworth	1768.49	50.42	1718.07	7/13/2016
RD-26	Chatsworth	1880.78	136.14	1744.64	7/14/2016
RD-40	Chatsworth	1972.05	281.09	1690.96	7/11/2016
RD-41A	Chatsworth	1773.71	106.88	1666.83	7/11/2016
RD-41B	Chatsworth	1774.73	118.04	1656.69	7/11/2016
RD-41C	Chatsworth	1773.73	124.93	1648.80	7/11/2016
RD-42	Chatsworth	1946.08	75.48	1870.60	7/11/2016
RD-49A	Chatsworth	1867.28	27.39	1839.89	7/11/2016
RD-49B	Chatsworth	1868.11	227.54	1640.57	7/11/2016
RD-49C	Chatsworth	1869.63	247.65	1621.98	7/11/2016
RD-56A-1	Chatsworth	1758.18	Dry	-	7/11/2016
RD-56A-2	Chatsworth	1758.21	368.46	1389.75	7/11/2016
RD-56A-3	Chatsworth	1758.20	383.78	1374.42	7/11/2016
RD-56B	Chatsworth	1761.31	162.08	1599.23	7/11/2016
RD-68A	Chatsworth Artesian	1307.97	-5.47	1313.44	8/12/2016
RD-68B	Chatsworth Artesian	1310.96	-3.42	1314.38	8/12/2016
RD-69	Chatsworth	1831.03	69.31	1761.72	7/13/2016
RD-70	Chatsworth	1732.44	132.54	1599.90	7/14/2016
RD-80	Chatsworth	1739.88	121.49	1618.39	7/13/2016
RD-81-1	Chatsworth	1705.88	88.16	1617.72	7/11/2016
RD-81-2	Chatsworth	1705.87	88.12	1617.75	7/11/2016
RD-81-3	Chatsworth	1705.87	88.11	1617.76	7/11/2016
RD-81-4	Chatsworth	1705.91	88.20	1617.71	7/11/2016
RD-82	Chatsworth	1676.71	58.76	1617.95	7/13/2016
RD-83	Chatsworth	1660.85	48.67	1612.18	7/13/2016
RD-104	Chatsworth	1826.83	Dry	-	7/11/2016
RS-08	Shallow	1821.46	Dry	-	7/11/2016
RS-10	Shallow	1762.08	Dry	_	7/11/2016

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TABLE 2-3 **Groundwater Level Data**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

	Groundwater-bearing	Monitoring Point Elevation	Depth to Groundwater	Static Groundwater Level Elevation	Date of
Well ID	Zone	(feet NGVD29)	(feet BTOC)	(feet NGVD29)	Measurement
RS-21	Shallow	1767.36	Dry	-	7/13/2016
RS-22	Shallow	1771.23	Dry	-	7/13/2016
RS-29	Shallow	1833.09	Dry	-	7/14/2016
RS-34	Shallow	1808.87	Dry	-	7/12/2016
SP-29A	Shallow	1264.68	-4.89	1269.57	8/12/2016
SP-29B	Shallow	1267.44	-5.31	1272.75	8/12/2016
SP-29C	Shallow	1265.34	-6.19	1271.53	8/12/2016
SP-33A	Shallow	1580.84	-1.52	1582.36	7/13/2016
SP-33B	Shallow	1580.72	-1.36	1582.08	7/13/2016
SP-33C	Shallow	1578.54	-4.02	1582.56	7/13/2016
SP-881A	Shallow	1618.67	Dry	-	7/12/2016
SP-881B	Shallow	1618.66	Dry	-	7/12/2016
SP-881C	Shallow	1618.77	8.33	1610.44	7/12/2016
SP-881D	Shallow	1618.18	7.65	1610.53	7/12/2016
SP-881G	Shallow	1617.67	7.30	1610.37	7/12/2016
SP-882A	Shallow	1611.94	Dry	-	7/12/2016
SP-882B	Shallow	1612.28	6.48	1605.80	7/12/2016
SP-882C	Shallow	1611.95	6.14	1605.81	7/12/2016
SP-882D	Shallow	1612.01	6.04	1605.97	7/12/2016
SP-882G	Shallow	1612.21	3.99	1608.22	7/12/2016
SP-890A	Shallow	1627.51	Dry	-	7/12/2016
SP-890B	Shallow	1627.91	6.36	1621.55	7/12/2016
SP-890C	Shallow	1627.31	5.88	1621.43	7/12/2016
SP-890D	Shallow	1627.39	5.92	1621.47	7/12/2016
SP-890G	Shallow	1628.12	5.55	1622.57	7/12/2016
WS-04A	Chatsworth	1750.99	132.82	1618.17	7/13/2016
WS-09	Chatsworth	1883.95	260.67	1623.28	7/11/2016
WS-09A	Chatsworth	1647.61	24.73	1622.88	7/12/2016
WS-09B	Chatsworth	1796.99	140.21	1656.78	7/13/2016
WS-12	Chatsworth	1706.26	88.08	1618.18	7/13/2016
WS-13	Chatsworth	1658.90	42.73	1616.17	7/13/2016
WS-SP	Chatsworth	1766.76	52.19	1714.57	7/13/2016

Depth to groundwater measurements in *Italic blue font* are likely not representative of groundwater levels. These measurements presumably represent groundwater suspended in the sump of the well (ECW) and are less than or equal to 0.5 foot from the bottom of the well.

NGVD29 = National Geodetic Vertical Datum of 1929

BTOC = below top of casing

ID = identification number

TABLE 2-4
Scheduled Well Locations and Corresponding Sample Analyses
NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

	Post-Closure Permit Regulated Unit Monitoring Programs (Semiannually)						
Well ID	Point of Compliance	Detection Monitoring	Evaluation Monitoring	Evaluation Monitoring (aff)	CAIM	New Feature/Spring Monitoring	
ES-21					COCs (all) If Active		
ES-22					COCs (all) If Active		
FDP-882 ^a						VOCs 1,4-Dioxane NDMA	
HAR-05			COCs (SPA)				
HAR-07			COCs (Delta) COCs (all)	COCs (Delta) COCs (all)	COCs (all) If Active		
HAR-08			COCs (Delta)	COCs (Delta)			
HAR-09	COCs (ABSP)	COCs (ABSP)	COCs (ABSP)	COCs (ABSP)			
HAR-11			COCs (ABSP)	COCs (ABSP)			
HAR-12		COCs (SPA)	COCs (SPA)	COCs (SPA)			
HAR-14	COCs (SPA)	COCs (SPA)	COCs (SPA)	COCs (SPA)			
HAR-15			COCs (SPA)	COCs (SPA)			
HAR-19		COCs (ABSP)	COCs (ABSP)	COCs (ABSP)			
HAR-20			COCs (ABSP)	COCs (ABSP)			
HAR-21			COCs (ABSP)	COCs (ABSP)			
HAR-23			COCs (SPA)				
HAR-27	COCs (Delta)	COCs (Delta)	COCs (Delta)	COCs (Delta)			
HAR-28		COCs (Delta)	COCs (Delta)	COCs (Delta)			
HAR-29		COCs (Delta)	COCs (Delta)	COCs (Delta)			
HAR-30		COCs (SPA)	COCs (SPA)	COCs (SPA)			
PZ-060			COCs (ABSP)	COCs (ABSP)			
PZ-070			COCs (ABSP)	COCs (ABSP)			
RD-04					COCs (all) If Active		
RD-05A			COCs (Delta)				
RD-05B			COCs (Delta)				
RD-05C			COCs (Delta)				
RD-09					COCs (all) If Active		
RD-40 ^b						1,4-Dioxane	
RD-41A ^c						VOCs 1,4-Dioxane Metals	
RD-41B ^c						VOCs 1,4-Dioxane Metals	
RD-49C			COCs (ABSP)	COCs (ABSP)		ivictuis	
RD-68A			COCs (ABSP)	1	1		

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TABLE 2-4 Scheduled Well Locations and Corresponding Sample Analyses NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

	Post-Closure Permit Regulated Unit Monitoring Programs (Semiannually)						
Well ID	Point of Compliance	Detection Monitoring	Evaluation Monitoring	Evaluation Monitoring (aff)	CAIM	New Feature/Spring Monitoring	
RD-68B	, ,	<u> </u>	COCs (ABSP)	,			
RD-104	COCs (ABSP)	COCs (ABSP)	COCs (ABSP)	COCs (ABSP)			
RS-08			COCs (ABSP)	COCs (ABSP)			
RS-34	COCs (SPA)	COCs (SPA)	COCs (SPA)	COCs (SPA)			
SP-29 (A,B, or C)						VOCs 1,2,3-TCP Fluoride Radiochemistry	
SP-33 (A,B, or C)						VOCs 1,4-Dioxane	
SP-881 (A, B, C, or D)						VOCs 1,4-Dioxane NDMA	
SP-881G						VOCs 1,4-Dioxane NDMA	
SP-882 (A, B, C, or D)						VOCs 1,4-Dioxane NDMA	
SP-882G						VOCs 1,4-Dioxane NDMA	
SP-890C						VOCs 1,4-Dioxane NDMA	
SP-890G						VOCs 1,4-Dioxane NDMA	
WS-04A			COCs (ABSP)				
WS-09					COCs (all) If Active		
WS-09A					COCs (all) If Active		

^a Groundwater sampling occurs semiannually at this location.

CAIM = corrective action interim monitoring

ABSP = Alfa/Bravo Skim Pond

aff = affected media

COC = contaminant of concern

ID = identification number

NDMA = n-nitrosodimethylamine

TCP = trichloropropane

VOC = volatile organic compound

SPA = Storable Propellant Area

b In addition to first quarter sampling, groundwater samples are also collected from this location during third quarter and analyzed for 1,4-dioxane.

c In addition to first quarter sampling, groundwater samples are also collected from this location during third quarter and analyzed for volatile organic compounds (VOCs), 1,4-dioxane, and dissolved metals.

TABLE 2-5

Monitoring Program Analyses

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Regulated Unit Monitoring Program ^{a,b,c} Analyses

nalysis Suite Abbreviation	Ana	alyte	Analytical Method
COCs (ABSP)	1,4-Dioxane, low level		8260SIM
	Ammonia	4500-NH3F ^d	
	DRO		8015B
	Fluoride, Nitrate as NO ₃		300.0
	Formaldehyde		8315A
	Kerosene fuel (RP-1, JP-1, JP-4)		8015B
	Nitrobenzene, 1,3-dinitrobenzene		SW8270C/SW8330A
	NDMA, low-level		SW8270C/SW8270C-SIM
	Oil		8015B
	Perchlorate, low-level		SW6850
	Phthalates ^d (beginning second quarter 2011)		8270C
	Unsymmetrical dimethylhydrazine (1,1-dimethyll	hydrazina HDMH)	SW8315M
	Volatile organic compounds	nyurazine, obivinj	8260B
COCs (Delta)	-		8260SIM
COCS (Delta)	1,4-Dioxane, low level Ammonia		
			4500-NH3F ^e
	Diesel range organics (DRO)		8015B
	Fluoride, Nitrate as NO ₃		300.0
	Formaldehyde	8315A	
	Kerosene fuel (RP-1, JP-1, JP-4)	8015B	
	Naphtene (GRO [C8-C11])	8015B	
	Nitrobenzene, 1,3-dinitrobenzene	SW8270C/SW8330A	
	NDMA, low-level	SW8270C/SW8270C-SIN	
	Perchlorate, low-level		SW6850
	pH	9040C	
	Unsymmetrical dimethylhydrazine (1,1-dimethyl	SW8315M	
	Volatile organic compounds		8260B
COCs (SPA)	1,4-Dioxane, low level	8260SIM	
	Ammonia	4500-NH3F ^d	
	Naphtene (GRO [C8-C11])	8015B	
	Fluoride, Nitrate as NO ₃	300.0	
	Formaldehyde	8315A	
	Hydrazines: Hydrazine, Momomethyl hydrazine,	SW8315M	
	Isopropyl alcohol		8260B
	Kerosene fuel (RP-1, JP-1, JP-4)		8015B
	Naphtene (C11)		8015B
	Nitrobenzene, 1,3-dinitrobenzene		SW8270C/SW8330A
	NDMA, low-level		SW8270C/SW8270C-SIM
	Perchlorate, low-level		SW6850
	pH		9040C
	Volatile organic compounds		8260B
VOCs Analyte List for	1,1,1-Trichloroethane	Ethylbenzene	8260B
Post-Closure Permit COCs	1,1,2-Trichloro-1,2,2-trifluoroethane		8260B 8260B
Post-closure Permit Cocs	· · · · · · · · · · · · · · · · · · ·	Methyl ethyl ketone	
	1,1,2-Trichloroethane	Methylene chloride	8260B
	1,1-Dichloroethane	Tetrachloroethene	8260B
	1,1-Dichloroethene	Toluene	8260B
	1,2-Dichloroethane	trans-1,2-Dichloroethene	8260B
	Acetone	Trichloroethene	8260B
	Benzene	Trichlorofluoromethane	8260B
	Carbon Tetrachloride	Vinyl chloride	8260B
	Chloroform	Xylenes	8260B
	cis-1,2-Dichloroethene		8260B

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TABLE 2-5

Monitoring Program Analyses

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Regulated Unit Monitoring Program ^{a,b,c} Analyses 2010 Post-Closure Permit - Contaminants of Concern

Analyses Abbreviations	Description
coc	Contaminant of Concern
COC (ABSP)	Contaminant of Concern for Regulated Unit Alfa/Bravo Skim Pond
COCs (Delta)	Contaminant of Concern for Regulated Unit Delta
COCs (SPA)	Contaminant of Concern for Regulated Units Storage Propellant Area (SPA) 1 and SPA-2
DRO	Diesel Range Organics (EPA 8015B)
GRO	Gasoline Range Organics (EPA 8015B)
Hydrazines	Hydrazine, Momomethyl hydrazine, and Unsymmetrical dimethylhydrazine
NDMA	n-Nitrosodimethylamine (EPA 1625M)
Nitrate	Nitrate as NO₃
VOC	Volatile Organic Compound (EPA 8260B)

^a California Department of Toxic Substances Control, 2010. Hazardous Waste Facility Post-Closure Permit, Regional Permit Numbers *PC 94/95-3-02 and PC-94/95-3-03*. Permits for Areas I and III, and Area II, revised January 5, 2010.

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^b Haley & Aldrich, 2010. Regulated Unit Water Quality Sampling and Analysis Plan, Areas I and III, Post-Closure Permit PC-94/95-3-02, Santa Susana Field Laboratory, Ventura County, California. April.

^c Haley & Aldrich, 2010. Regulated Unit Water Quality Sampling and Analysis Plan, Area II, Post Closure Permit PC-94/95-3-03, Santa Susana Field Laboratory, Ventura County, California. April.

^d Added to COC list based on new, verified detections; was not on original COC list in Post-Closure Permit.

e U.S. Environmental Protection Agency (EPA) Analytical method 4500-NH3F is equivalent to method 350.2 specified in the permit for ammonia

TABLE 2-6 **Groundwater Quality Data and Field Parameters**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

						Quarter 2010	,	,,	Oxidation	Final
			Volume					Dissolved	Reduction	Groundwater
			Purged	Temperature		Conductivity	Turbidity	Oxygen	Potential	Level
Well ID	Date	Time	(gallons)	(°C)	рΗ	(µS/cm)	(NTU)	(mg/L)	(mV)	(feet btc)
HAR-05	7/15/16	10:00	3.0	19.15	6.94	548	0	0	55	55.52
HAR-07	7/12/16	9:30	2.2	20.29	6.00	652	0	1.22	-3	83.05
HAR-08	7/19/16	9:30	0.8	20.86	6.92	858	0	0.31	141	65.81
HAR-11	7/19/16	12:00	2.5	26.78	6.70	1,650	0	0.73	19	27.50
HAR-11	7/28/16	11:45	0.4	27.79	6.70	1,630	0	0.44	23	11.45
HAR-19	7/26/16	11:00	1.6	17.87	6.16	705	21.2	0.34	169	193.52
HAR-20	7/12/16	9:15	10.8	18.48	7.07	1,730	2.6	2.54	-31	190.82
HAR-21	7/18/16	12:30	1.2	18.03	7.38	1,560	0	0	-148	30.24
HAR-23	7/18/16	11:00	2.4	18.12	6.05	591	1.0	0	293	45.38
RD-05A	7/13/16	10:15	1.7	21.05	6.15	799	0	0.80	265	82.35
RD-05B	7/13/16	13:00	3.2	18.90	8.06	342	0	0.24	-69	66.83
RD-05C	7/14/16	9:30	3.4	17.75	6.87	768	0	0.23	-158	50.08
RD-40	7/13/16	13:15	0.7	26.72	5.93	777	872	3.82	223	281.30
RD-41A	7/25/16	8:45	1.4	19.33	7.44	856	3.5	1.33	228	106.52
RD-41B	7/12/16	13:30	1.7	20.29	7.28	716	60.2	0	-117	124.72
RD-41B	7/22/16	14:30	16.9	22.41	4.92	610	0.4	0.71	97	118.93
RD-49C	7/19/16	12:00	23.5	18.19	6.02	571	35.5	0	-93	53.04
RD-68A	8/12/16	10:30	2.4	20.42	6.97	774	0	2.10	-4	Artesian
RD-68B	8/12/16	11:30	1.3	20.44	7.03	693	0	1.79	-7	Artesian
SP-29B	8/12/16	9:30	1.6	17.22	6.82	797	0	1.40	78	Artesian
SP-33C	7/13/16	9:00	0.4	17.46	5.90	858	0	0.38	7	Artesian
SP-881C	7/20/16	8:45	0.6	17.35	6.70	1,500	35	0	207	8.95
SP-881G	7/20/16	12:30	0.5	12.85	6.99	1,730	2.8	0.48	-14	7.69
SP-882B	7/15/16	12:30	0.5	26.81	7.04	839	0	2.71	-5	4.06
SP-882G	7/14/16	12:00	0.3	27.36	6.79	1,120	0	2.53	36	5.26
SP-890C	7/20/16	11:30	0.4	20.52	7.01	758	0	0.36	-12	6.06
SP-890G	7/20/16	12:30	0.3	20.31	6.98	776	0	0	3	5.55
WS-04A	7/14/16	9:45	4.1	17.01	6.33	1,540	0	0	-86	133.08

[°]C = degree(s) Celsius

 μ S/cm = microSiemen(s) per centimeter

BTOC = below top of casing

ID = identification number

mg/L = milligram(s) per liter

mV = millivolt(s)

NTU = nephelometric turbidity unit(s)

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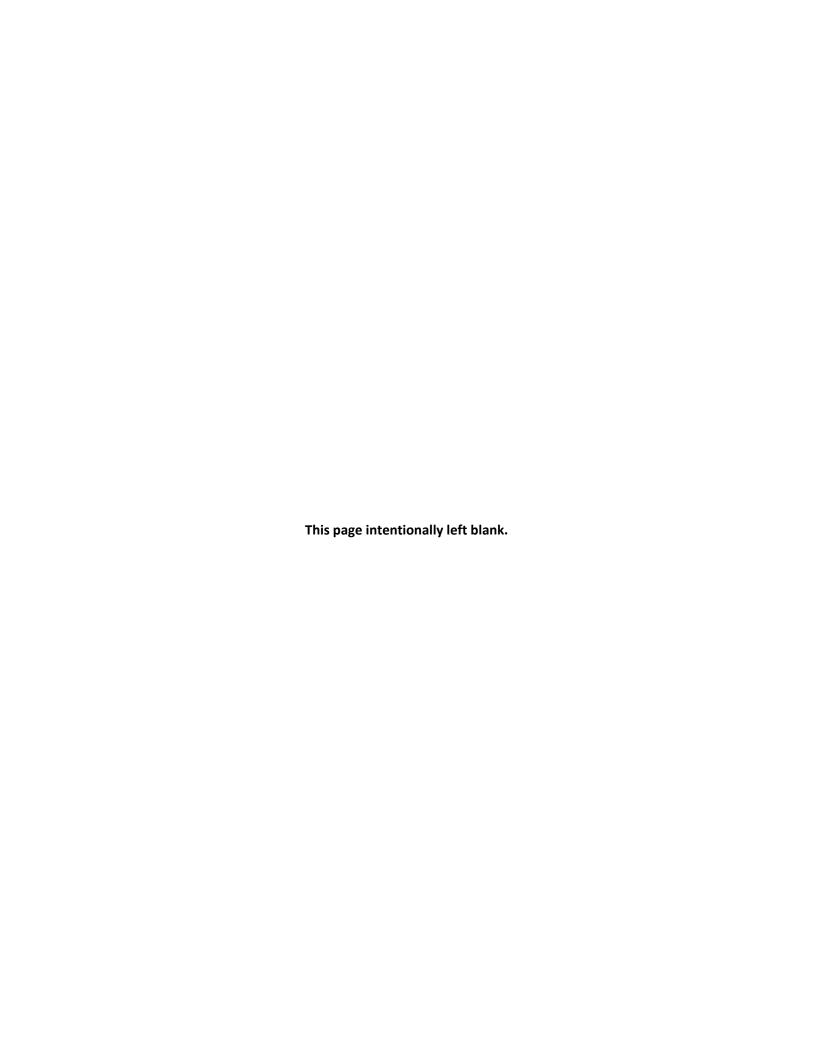


TABLE 3-1 **Groundwater Screening Reference Values**NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Halogenated Ethenes	1,2-Dichloroethenes	130	μg/L	SWGW RBSL
Halogenated Ethenes	Tetrachloroethene	5	μg/L	Primary MCL
lalogenated Ethenes	Trichloroethene	5	μg/L	Primary MCL
lalogenated Ethenes	cis-1,2-Dichloroethene	6	μg/L	California MCL
lalogenated Ethenes	trans-1,2-Dichloroethene	10	μg/L	California MCL
lalogenated Ethenes	1,1-Dichloroethene	6	μg/L	California MCL
lalogenated Ethenes	Vinyl chloride	0.5	μg/L	California MCL
lalogenated Ethanes	1,1,2,2-Tetrachloroethane	1	μg/L	California MCL
lalogenated Ethanes	1,1,2-Trichloroethane	5	μg/L	Primary MCL
lalogenated Ethanes	1,1,1-Trichloroethane	200	μg/L	Primary MCL
lalogenated Ethanes	1,2-Dichloroethane	0.5	μg/L	California MCL
lalogenated Ethanes	1,1-Dichloroethane	5	μg/L	California MCL
lalogenated Ethanes	Chloroethane	16	μg/L	Taste/Odor
lalogenated Ethanes	1,2-Dibromoethane	0.05	μg/L	Primary MCL
lalogenated Ethanes	1,1,2-Trichloro-1,2,2-trifluoroethane	1200	μg/L	California MCL
lalogenated Ethanes	1,2-Dichloro-1,1,2-trifluoroethane	190000	μg/L	SWGW RBSL
lalogenated Ethanes	2,2-Dichloro-1,1,1-trifluoroethane	190000	μg/L	SWGW RBSL
lalogenated Methanes	Carbon Tetrachloride	0.5	μg/L	California MCL
lalogenated Methanes	Chloroform	80	μg/L	Primary MCL
lalogenated Methanes	Methylene chloride	5	μg/L	Primary MCL
lalogenated Methanes	Chloromethane	5.7	μg/L	SWGW RBSL
lalogenated Methanes	Trichlorofluoromethane	150	μg/L	California MCL
lalogenated Methanes	Dichlorodifluoromethane	1000	μg/L	Notification Level
lalogenated Methanes	Bromochloromethane	34000	μg/L	Taste/Odor
lalogenated Methanes	Bromodichloromethane	80	μg/L	Primary MCL
lalogenated Methanes	Bromoform	80	μg/L	Primary MCL
lalogenated Methanes	Bromomethane	8.8	μg/L	SWGW RBSL
lalogenated Methanes	Dibromochloromethane	80	μg/L	Primary MCL
Ion-Halogenated VOCs	2-Heptanone	280	μg/L	Taste/Odor
Ion-Halogenated VOCs	Benzyl chloride	12	μg/L	Taste/Odor
Ion-Halogenated VOCs	Cumene	770	μg/L	Notification Level
Ion-Halogenated VOCs	Ethanol	760000	μg/L	Taste/Odor
Ion-Halogenated VOCs	Ethyl acetate	2600	μg/L	Taste/Odor
Ion-Halogenated VOCs	Ethyl ether	750	μg/L	Taste/Odor
Ion-Halogenated VOCs	Methanol	740000	μg/L	Taste/Odor
Ion-Halogenated VOCs	m-Xylene & p-Xylene	1750	μg/L	California MCL
Ion-Halogenated VOCs	n-Hexane	6.4	μg/L	Taste/Odor
Ion-Halogenated VOCs	Pentanal	17	μg/L	Taste/Odor
Non-Halogenated VOCs	sec-Butyl alcohol	19000	μg/L	Taste/Odor
Non-Halogenated VOCs	tert-Butyl alcohol	12	μg/L	Notification Level
Ion-Halogenated VOCs	1,3,5-Trimethylbenzene	330	μg/L	Notification Level
Ion-Halogenated VOCs	1,2,4-Trimethylbenzene	330	μg/L	Notification Level
Ion-Halogenated VOCs	2-Hexanone	250	μg/L	Taste/Odor
Ion-Halogenated VOCs	Acetone	20000	μg/L	Taste/Odor
Non-Halogenated VOCs	Acetonitrile	300000	μg/L	Taste/Odor
Ion-Halogenated VOCs	Acrolein	110	μg/L	Taste/Odor
Ion-Halogenated VOCs	Acrylonitrile	910	μg/L	Taste/Odor
Ion-Halogenated VOCs	Benzene	1	μg/L	California MCL
Ion-Halogenated VOCs	Formaldehyde	100	μg/L	Notification Level
Ion-Halogenated VOCs	Carbon Disulfide	160	μg/L	Notification Level
Ion-Halogenated VOCs	Ethane	7500	μg/L	Taste/Odor
Ion-Halogenated VOCs	Ethylbenzene	300	μg/L	California MCL
Ion-Halogenated VOCs	Ethylene	39	μg/L	Taste/Odor
Ion-Halogenated VOCs	Isopropanol	160000	μg/L	Taste/Odor
Ion-Halogenated VOCs	m-Xylene	1750	μg/L μg/L	California MCL
Ion-Halogenated VOCs	Methacrylonitrile	2100	μg/L μg/L	Taste/Odor
Ion-Halogenated VOCs	Methane	3100	μg/L μg/L	SWGW RBSL
Ion-Halogenated VOCs	Methyl ethyl ketone	3800	μg/L μg/L	SWGW RBSL
	Methyl isobutyl ketone (MIBK)	120		Notification Level
	ivietnyi isobutyi ketone (iviiBK)		μg/L μg/L	
	N. d. a. b. v. l. no. a. b. a. a. v. d. a. b.		1107/1	Taste/Odor
Ion-Halogenated VOCs	Methyl methacrylate	25		CNACL
Ion-Halogenated VOCs Ion-Halogenated VOCs Ion-Halogenated VOCs	Methyl tert-butyl ether	5	μg/L	SMCL
lon-Halogenated VOCs lon-Halogenated VOCs lon-Halogenated VOCs	Methyl tert-butyl ether n-Butylbenzene	5 260	μg/L μg/L	Notification Level
Ion-Halogenated VOCs Ion-Halogenated VOCs Ion-Halogenated VOCs Ion-Halogenated VOCs	Methyl tert-butyl ether n-Butylbenzene n-Propylbenzene	5 260 260	μg/L μg/L μg/L	Notification Level Notification Level
Ion-Halogenated VOCs	Methyl tert-butyl ether n-Butylbenzene	5 260	μg/L μg/L	Notification Level

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TABLE 3-1 **Groundwater Screening Reference Values** *NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California*

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Non-Halogenated VOCs	sec-Butylbenzene	260	μg/L	Notification Level
Non-Halogenated VOCs	Styrene	100	μg/L	Primary MCL
Non-Halogenated VOCs	tert-Butylbenzene	260	μg/L	Notification Level
Non-Halogenated VOCs	Toluene	150	μg/L	California MCL
Non-Halogenated VOCs	Vinyl acetate	88	μg/L	Taste/Odor
Non-Halogenated VOCs	Xylenes, Total	1750	μg/L	California MCL
Halogenated Benzenes	1,2,3-Trichlorobenzene	2.1	μg/L	SWGW RBSL
Halogenated Benzenes	1,2,4-Trichlorobenzene	5	μg/L	California MCL
Halogenated Benzenes	1,2-Dichlorobenzene	600	μg/L	Primary MCL
Halogenated Benzenes	1,3-Dichlorobenzene	600	μg/L	Archived Advisory Level
Halogenated Benzenes	1,4-Dichlorobenzene	5	μg/L	California MCL
Halogenated Benzenes	Chlorobenzene	70	μg/L	California MCL
Halogenated Propene/Propanes	1,2,3-Trichloropropane	0.005	μg/L	Notification Level
Halogenated Propene/Propanes	1,2-Dibromo-3-chloropropane	0.2	μg/L	Primary MCL
Halogenated Propene/Propanes	1,2-Dichloropropane	5	μg/L	Primary MCL
Halogenated Propene/Propanes	1,3-Dichloropropane	130	μg/L	SWGW RBSL
Halogenated Propene/Propanes	1,3-Dichloropropene	0.5	μg/L	California MCL
Halogenated Propene/Propanes	Allyl chloride	8.9	μg/L	Taste/Odor
Halogenated Propene/Propanes	cis-1,3-Dichloropropene	0.5	μg/L	California MCL
Halogenated Propene/Propanes	trans-1,3-Dichloropropene	0.81	μg/L	SWGW RBSL
Other Halogenated VOCs	o-Chlorotoluene	140	μg/L	Notification Level
Other Halogenated VOCs	p-Chlorotoluene	140	μg/L	Notification Level
1,4-Dioxane	1,4-Dioxane	1	μg/L	Notification Level
Radionuclides	Uranium	20	pCi/L	California MCL
Radionuclides	Combined Radium - 226+228	5	pCi/L	California MCL
Radionuclides	Gross Alpha particle activity (excluding radon & uranium)	15	pCi/L	California MCL
Radionuclides	Gross Beta particle activity	50	pCi/L	California MCL
Radionuclides	Gross Beta particle activity	4	millirem/yr	California MCL
Radionuclides	Strontium-90	8	pCi/L	California MCL
Radionuclides	Tritium	20,000	pCi/L	California MCL
SVOC	Diphenyl ether	630	μg/L	SWGW RBSL
SVOC	p-Cresol	63	μg/L	SWGW RBSL
SVOC	p-Dinitrobenzene	1.3	μg/L	SWGW RBSL
SVOC	Diazinon	1.2	μg/L	Notification Level
SVOC	Diethyl phthalate	10000	μg/L	SWGW RBSL
SVOC	Ethylene glycol	14000	μg/L	Notification Level
SVOC	Hydrazine	160000	μg/L	Taste/Odor
SVOC	m-Cresol	37	μg/L	Taste/Odor
SVOC	o-Cresol	630	μg/L	SWGW RBSL
SVOC	1,2,3-Trichloropropene	0.005	μg/L	Notification Level
SVOC	1,3-Dinitrobenzene	1.3	μg/L	SWGW RBSL
SVOC	2,4,6-Trichlorophenol	2.1	μg/L	SWGW RBSL
SVOC	2,4,6-Trinitrotoluene	1	μg/L	Notification Level
SVOC	2,4-Dimethylphenol	100	μg/L	Archived Advisory Level
SVOC SVOC	2,6-Dinitrotoluene	0.22 63	μg/L	SWGW RBSL
	2-Chlorophenol		μg/L	SWGW RBSL
SVOC SVOC	3,3'-Dichlorobenzidine 4,6-Dinitro-o-cresol	0.12 1.3	μg/L	SWGW RBSL SWGW RBSL
SVOC	4,6-Dinitro-o-cresoi Aniline	65000	μg/L μg/L	Taste/Odor
SVOC	Benzidine	0.0003		SWGW RBSL
SVOC	Benzoic acid	50000	μg/L μg/L	SWGW RBSL
SVOC	bis(2-Chloroethoxy)methane	38		SWGW RBSL
SVOC	bis(2-Chloroethyl) ether	360	μg/L	Taste/Odor
SVOC	bis(2-Ethylhexyl) phthalate	4	μg/L	California MCL
SVOC	Butyl benzyl phthalate	78	μg/L μg/L	SWGW RBSL
SVOC	Di-n-butyl phthalate	1300	μg/L μg/L	SWGW RBSL
SVOC	Di-n-octyl phthalate	500	μg/L μg/L	SWGW RBSL
SVOC	Dimethyl phthalate	130000	μg/L μg/L	SWGW RBSL
SVOC	Hexachlorobenzene	1	μg/L μg/L	Primary MCL
3100		50	μg/L μg/L	Primary MCL
SVOC		JU	ı μ <u>κ</u> /∟	I THITIGHT Y IVICE
SVOC	Hexachlorocyclopentadiene Hexachloroethane			Taste/Odor
SVOC	Hexachloroethane	10	μg/L	Taste/Odor
SVOC SVOC	Hexachloroethane Isophorone	10 5400	μg/L μg/L	Taste/Odor
SVOC SVOC	Hexachloroethane Isophorone Kepone	10 5400 0.0093	μg/L μg/L μg/L	Taste/Odor SWGW RBSL
SVOC SVOC	Hexachloroethane Isophorone	10 5400	μg/L μg/L	Taste/Odor

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TABLE 3-1 **Groundwater Screening Reference Values** *NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California*

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
SVOC	Nitrobenzene	110	μg/L	Taste/Odor
SVOC	o-Toluidine	11000	μg/L	Taste/Odor
SVOC	Pentachloronitrobenzene	20	μg/L	Archived Advisory Level
SVOC	Pentachlorophenol	1	μg/L	Primary MCL
SVOC	Phenol	4200	μg/L	Archived Advisory Level
SVOC	Pyridine	950	μg/L	Taste/Odor
PAH	Benzo(a)pyrene TEQ ^a	0.0071	μg/L	TEQ
PAH	2-Methylnaphthalene	50	μg/L	SWGW RBSL
PAH	Anthracene	3800	μg/L	SWGW RBSL
PAH	Benzo(a)pyrene	0.2	μg/L	Primary MCL
PAH	Phenanthrene	3800	μg/L	SWGW RBSL
PAH	Pyrene	380	μg/L	SWGW RBSL
NDMA	NDMA	0.01	μg/L	Notification Level
Perchlorate	Perchlorate	6	μg/L	California MCL
ТРН	Fuel Hydrocarbons, C4-C12, as heavy Hydrocarbons	500	μg/L	SWGW RBSL
ТРН	Fuel Hydrocarbons, C6-C14, as JP-4	1800	μg/L	SWGW RBSL
ТРН	Fuel Hydrocarbons, C6-C15, as JP-4	1800	μg/L	SWGW RBSL
ТРН	Fuel Hydrocarbons, C6-C16, as JP-4	1800	μg/L	SWGW RBSL
ТРН	Fuel Hydrocarbons, C6-C16, C21-C24, as JP-4	1800	μg/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C6-C7	500	μg/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C7-C10, as gasoline	5	μg/L	Taste/Odor
TPH	Fuel Hydrocarbons, C7-C14, as JP-4	1800	μg/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C7-C16, as JP-4	1800	μg/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C8-C10, as gasoline	5	μg/L	Taste/Odor
TPH	Fuel Hydrocarbons, C8-C12, as heavy Hydrocarbons	1800	μg/L	SWGW RBSL
TPH	Fuel Hydrocarbons, C8-C14, as heavy Hydrocarbons	1800	μg/L	SWGW RBSL
TPH	Gasoline Range Organics (C4-C12)	5	μg/L	Taste/Odor
TPH	Gasoline Range Organics (C6-C14)	5	μg/L	Taste/Odor
TPH	Gasoline Range Organics (C7-C12)	5	μg/L	Taste/Odor
TPH	Diesel Range Organics	100	μg/L	Taste/Odor
TPH	Diesel Range Organics (C12-C14)	100	μg/L	Taste/Odor
TPH	Diesel Range Organics (C13-C22)	100	μg/L	Taste/Odor
TPH	Diesel Range Organics (C14-C20)	100	μg/L	Taste/Odor
TPH	Diesel Range Organics (C15-C20)	100	μg/L	Taste/Odor
TPH TPH	Diesel Range Organics (C20-C30)	100 100	μg/L	Taste/Odor
TPH TPH	Diesel Range Organics (C21-C24)	100	μg/L	Taste/Odor
TPH	Diesel Range Organics (C21-C30) Diesel Range Organics (C8-C11)	100	μg/L μg/L	Taste/Odor Taste/Odor
TPH	Diesel Range Organics (Co-C11) Diesel Range Organics (C8-C30)	100	μg/L μg/L	Taste/Odor
TPH	Fuel Hydrocarbons, C6-C17, as JP-4	1800		SWGW RBSL
TPH	Gasoline Range Organics (C8-C11)	1800	μg/L μg/L	SWGW RBSL
TPH	Jet Fuel 4 (C6-C13)	1800	μg/L	SWGW RBSL
TPH	Kerosene (C10-C12)	1800	μg/L	SWGW RBSL
TPH	Kerosene (C10-C14)	1800	μg/L	SWGW RBSL
TPH	Kerosene Range Organics (C11-C14)	1800	μg/L	SWGW RBSL
TPH	TPH (as Kerosene)	1800	μg/L	SWGW RBSL
TPH	Gasoline Range Organics	5	μg/L	Taste/Odor
TPH	Gasoline Range Organics (C6-C12)	5	μg/L	Taste/Odor
PCB	Aroclor 1016	0.5	μg/L	Primary MCL
PCB	PCBs	0.5	μg/L	Primary MCL
PCB	Aroclor 1254	0.5	μg/L	Primary MCL
PCB	Aroclor 1260	0.5	μg/L	Primary MCL
PCB	Aroclor 1221	0.5	μg/L	Primary MCL
PCB	Aroclor 1232	0.5	μg/L	Primary MCL
PCB	Aroclor 1242	0.5	μg/L	Primary MCL
PCB	Aroclor 1248	0.5	μg/L	Primary MCL
Herbicides	2,4-Dichlorophenoxyacetic Acid (2,4-D)	130	μg/L	SWGW RBSL
Herbicides	2,4,5-T	130	μg/L	SWGW RBSL
Herbicides	Dinoseb	7	μg/L	Primary MCL
Herbicides	Propachlor	90	μg/L	Notification Level
Pesticides	Endosulfan I	75	μg/L	SWGW RBSL
Pesticides	Endosulfan II	75	μg/L	SWGW RBSL
Pesticides	gamma-BHC	0.2	μg/L	Primary MCL
Pesticides	Methyl parathion	2	μg/L	Archived Advisory Level
Pesticides	p,p'-Methoxychlor	30	μg/L	California MCL
Pesticides	Parathion	40	μg/L	Archived Advisory Level

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TABLE 3-1 **Groundwater Screening Reference Values** *NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California*

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Pesticides	Endosulfan sulfate	75	μg/L	SWGW RBSL
Pesticides	4,4'-DDE	0.44	μg/L	SWGW RBSL
Pesticides	Aldrin	0.002	μg/L	Archived Advisory Level
Pesticides	alpha-BHC	0.015	μg/L	Archived Advisory Level
Pesticides	beta-BHC	0.025	μg/L	Archived Advisory Level
Pesticides	Chlordane	0.1	μg/L	California MCL
Pesticides	Dieldrin	0.002	μg/L	Archived Advisory Level
Pesticides	Dimethoate	1	μg/L	Archived Advisory Level
Pesticides	4,4'-DDD	0.62	μg/L	SWGW RBSL
Pesticides	Toxaphene	3	μg/L	Primary MCL
Pesticides	Endrin	2	μg/L	Primary MCL
Pesticides	Heptachlor	0.01	μg/L	California MCL
Pesticides	Heptachlor epoxide	0.01	μg/L	California MCL
Dioxins/Furans	2,3,7,8-TCDD TEQ ^b	0.0000037	μg/L	TEQ
	2,3,7,8-TCDD TEQ 2,3,7,8-TCDD			Primary MCL
Dioxins/Furans		0.00003	μg/L	SWGW RBSL
Metals	Aluminum, Dissolved	13000	μg/L	
Metals	Boron, Dissolved	340	μg/L	SSFL Comparison
Metals	Tin, Dissolved	2.4	μg/L	SSFL Comparison
Metals	Antimony, Dissolved	2.5	μg/L	SSFL Comparison
Metals	Arsenic, Dissolved	7.7	μg/L	SSFL Comparison
Metals	Barium, Dissolved	150	μg/L	SSFL Comparison
Metals	Beryllium, Dissolved	0.14	μg/L	SSFL Comparison
Metals	Cadmium, Dissolved	0.2	μg/L	SSFL Comparison
Metals	Chromium, Dissolved	14	μg/L	SSFL Comparison
Metals	Cobalt, Dissolved	1.9	μg/L	SSFL Comparison
Metals	Copper, Dissolved	4.7	μg/L	SSFL Comparison
Metals	Hexavalent Chromium, Dissolved	38	μg/L	SWGW RBSL
Metals	Iron, Dissolved	4100	μg/L	SSFL Comparison
Metals	Lead, Dissolved	11	μg/L	SSFL Comparison
Metals	Magnesium, Dissolved	77000	μg/L	SSFL Comparison
Metals	Manganese, Dissolved	150	μg/L	SSFL Comparison
Metals	Mercury, Dissolved	0.063	μg/L	SSFL Comparison
Metals	Molybdenum, Dissolved	2.2	μg/L	SSFL Comparison
Metals	Nickel, Dissolved	17	μg/L	SSFL Comparison
Metals	Potassium, Dissolved	9600	μg/L	SSFL Comparison
Metals	Selenium, Dissolved	1.6	μg/L	SSFL Comparison
Metals	Silver, Dissolved	0.17	μg/L	SSFL Comparison
Metals	Sodium, Dissolved	190000	μg/L	SSFL Comparison
Metals	Strontium, Dissolved	800	μg/L	SSFL Comparison
Metals	Thallium, Dissolved	0.13	μg/L	SSFL Comparison
Metals	Vanadium, Dissolved	2.6	μg/L	SSFL Comparison
Metals	Zinc, Dissolved	6300	μg/L	SSFL Comparison
Metals	Aluminum	200	μg/L	SMCL
Metals	Antimony	2.5	μg/L	SSFL Comparison
	· · · · · · · · · · · · · · · · · · ·			'
Metals Metals	Arsenic Barium	7.7 150	μg/L μg/L	SSFL Comparison SSFL Comparison
	Beryllium	0.14		<u>'</u>
Metals	·		μg/L	SSFL Comparison
Metals	Boron	340	μg/L	SSFL Comparison
Metals	Chromium	0.2	μg/L	SSFL Comparison
Metals	Chromium	14	μg/L	SSFL Comparison
Metals	Cobalt	1.9	μg/L	SSFL Comparison
Metals	Copper	4.7	μg/L	SSFL Comparison
Metals	Hexavalent Chromium	14	μg/L	SSFL Comparison
Metals	Iron	4100	μg/L	SSFL Comparison
Metals	Lead	11	μg/L	SSFL Comparison
Metals	Magnesium	77000	μg/L	SSFL Comparison
Metals	Manganese	150	μg/L	SSFL Comparison
Metals	Mercury	0.063	μg/L	SSFL Comparison
Metals	Molybdenum	2.2	μg/L	SSFL Comparison
Metals	Nickel	17	μg/L	SSFL Comparison
Metals	Potassium	9600	μg/L	SSFL Comparison
Metals	Selenium	1.6	μg/L	SSFL Comparison
Metals	Silver	0.17	μg/L	SSFL Comparison
Metals	Sodium	190000	μg/L	SSFL Comparison
Metals	Strontium	800	μg/L	SSFL Comparison
Metals	Thallium	0.13	μg/L	SSFL Comparison

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TABLE 3-1 **Groundwater Screening Reference Values**

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Analyte Group	Chemical Analyte	Screening Value	Units	Screening Type
Metals	Tin	2.4	μg/L	SSFL Comparison
Metals	Vanadium	2.6	μg/L	SSFL Comparison
Metals	Zinc	6300	μg/L	SSFL Comparison
Inorganics	Chlorine	4000	μg/L	Primary MCL
Inorganics	Nitrate-NO ₃	45000	μg/L	California MCL
Inorganics	Chloride	250000	μg/L	SMCL
Inorganics	Chlorate	0.8	μg/L	Notification Level
Inorganics	Cyanides	150	μg/L	California MCL
Inorganics	Fluoride	800	μg/L	SSFL Comparison
Inorganics	HMX	350	μg/L	Notification Level
Inorganics	Nitrate-N	10000	μg/L	Primary MCL
Inorganics	Nitrite-N	1000	μg/L	Primary MCL
Inorganics	RDX	0.3	μg/L	Notification Level
Inorganics	Sulfate	376000	μg/L	SSFL Comparison
Inorganics	Total Dissolved Solids	500000	μg/L	Recommended SMCL
Inorganics	Total Dissolved Solids	1000000	μg/L	Upper SMCL
Inorganics	Total Dissolved Solids	1500000	μg/L	Short-term SMCL
General Chemistry	Formic Acid	1700000	μg/L	Taste/Odor
General Chemistry	Turbidity	5	NTU	SMCL
General Chemistry	Specific conductivity	900	μmhos/cm	Recommended SMCL
General Chemistry	Specific conductivity	1600	μmhos/cm	Upper SMCL
General Chemistry	Specific conductivity	2200	μmhos/cm	Short-term SMCL

Benzo(a)pyrene toxic equivalency quotient (TEQ) includes the seven generally recognized carcinogenic polycyclic aromatic hydrocarbons (PAHs): benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-,cd)pyrene.

Analyte:

BHC = benzene hexachloride

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethene

 $\label{eq:NDMA} \textbf{NDMA} = \textbf{n-nitrosodimethylamine}$

 ${\sf PCB} = {\sf polychlorinated\ biphenyl}$

SVOC = semivolatile organic compound

T = trichlorophenoxyacetic acid

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

Screening Type:

MCL = maximum contaminant level

SMCL = secondary maximum contaminant level

Taste/Odor = taste/odor threshold

SSFL Comparison = site-specific values for metals developed by the California Department of Toxic Substances

SWGW RBSL = sitewide groundwater risk-based screening level

TEQ = toxicity equivalency quotient

Units:

μg/L = microgram(s) per liter

millirem/yr = millirem per year

pCi/L = picoCurie(s) per liter

NTU = nephelometric turbidity unit(s)

μmhos/cm = micromho(s) per centimeter

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^b 2,3,7,8-Tetrachlorodibenzodioxin (TCDD) TEQ includes all dioxin and furan congeners that are chlorinated in the 2nd, 3rd, 7th, and 8th positions.

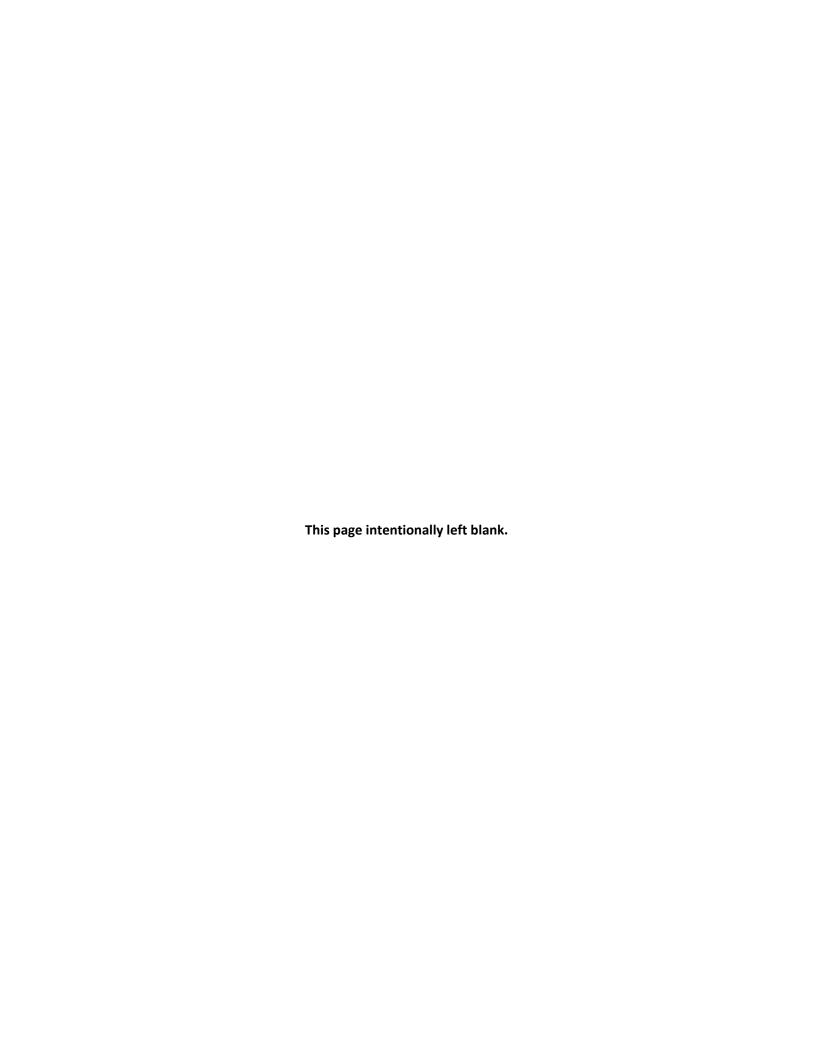


TABLE 3-2 Validated Analytical - Detections Only

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

_	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Unit
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	2.7 =	μg/
						SW8260B	Acetone	31 J	μg/
							cis-1,2-Dichloroethene	5.6 =	μg/
							Isopropanol	170 =	μg/
						SW8315A	Formaldehyde	23 J	μg/
					PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.11 J	μg/
							Diethyl phthalate	0.21 J	μg/
							Dimethyl phthalate	0.12 J	μg/
					HC	SW8015B	Diesel Range Organics (C12-C14)	28 J	μg/
							Diesel Range Organics (C15-C20)	300 =	μg/
							Diesel Range Organics (C21-C30)	130 =	μg/
							Diesel Range Organics (C8-C30)	460 =	μg/
					GENCHEM	E300	Fluoride	0.45 =	mg/
						4500-NH3F	Ammonia as Nitrogen (N)	0.035 J	mg/
	HAR-11	HAR11GW01S008	7/28/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.38 =	mg/
	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	2.1 =	μg/
			7,12,2010			SW8260B	cis-1,2-Dichloroethene	44 =	μg/
							trans-1,2-Dichloroethene	12 =	μg/
							Trichloroethene	12 =	
									μg/
						CNAGORES	Vinyl chloride	1.6 =	μg/ /
					DUTT	SW8315A	Formaldehyde	24 J	μg/ /
					PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.22 J	μg/ ,
							Dimethyl phthalate	0.045 J	μg/
							Di-n-butyl phthalate	0.19 J	μg/
					HC	SW8015B	Diesel Range Organics (C12-C14)	21 J	μg/
							Diesel Range Organics (C15-C20)	490 =	μg/
							Diesel Range Organics (C21-C30)	280 =	μg/
							Diesel Range Organics (C8-C30)	790 =	μg/
							ORO (C31-C40)	34 J	μg/
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.06 =	mg/
						E300	Fluoride	0.36 =	mg/
	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.91 J	μg/
			7,13,2010	.,	V 00	SW8260B	cis-1,2-Dichloroethene	34 =	<u> </u>
							trans-1,2-Dichloroethene	2.4 J	
									μg/ σ/
						C14/02454	Trichloroethene	0.39 J	μg/
						SW8315A	Formaldehyde	49 J	μg/
					PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.15 J	μg/
							Butyl benzyl phthalate	0.12 J	μg/
							Di-n-butyl phthalate	0.12 J	μg/
					HC	SW8015B	Diesel Range Organics (C21-C30)	69 =	μg/
							Diesel Range Organics (C8-C11)	9 J	μg/
							Diesel Range Organics (C8-C30)	78 =	μg/
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.024 J	mg/
						E300	Fluoride	0.18 =	mg,
					ENRG_PROP	E314	Perchlorate	3.4 =	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.61 J	μg/
			,,14,2010	.•		SW8315A	Formaldehyde	120 =	μg/
					PHTH	SW8270C-SIM	· · · · · · · · · · · · · · · · · · ·		
					rnin	34497/0C-211A	Bis(2-ethylhexyl)phthalate	0.093 J	μg/
					CENCUENA	4500 NU125	Butyl benzyl phthalate	0.072 J	μg/ ma
		1			GENCHEM	4500-NH3F E300	Ammonia as Nitrogen (N)	0.057 = 0.14 =	mg,
								(1111 -	mg,
	14.00 0 : :	NACO AA CILIDATE E E	7/11/				Fluoride		
	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.59 J	
	WS-04A	WS04AGW01D006	7/14/2016	FD		SW8260B-SIM SW8315A	1,4-Dioxane (P-Dioxane) Formaldehyde	0.59 J 100 =	μg/
	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC PHTH	SW8260B-SIM	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate	0.59 J 100 = 0.11 J	μg/ μg/
	WS-04A	WS04AGW01D006	7/14/2016	FD	РНТН	SW8260B-SIM SW8315A SW8270C-SIM	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate	0.59 J 100 = 0.11 J 0.077 J	μg/ μg/ μg/
	WS-04A	WS04AGW01D006	7/14/2016	FD		SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N)	0.59 J 100 = 0.11 J 0.077 J 0.046 J	µg/ µg/ µg/ µg/ mg/
					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 =	µд, µд, µд, mg,
RV	WS-04A HAR-19	WS04AGW01D006 HAR19GW01S016	7/14/2016	FD	РНТН	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N)	0.59 J 100 = 0.11 J 0.077 J 0.046 J	μg/ μg/ μg/
RV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 =	µg/ µg/ µg/ mg, mg,
BRV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 =	µg/ µg/ µg/ mg, mg, µg/ µg/
RV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 =	µg/ µg/ µg/ mg, mg, µg/ µg/
SRV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J	µg, µg, µg, mg mg, µв, µв, µв,
BRV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 =	µg, µg, µg, mg, mg, µв, µв, µв, µв, µв,
RV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 =	де, нд, мд, мд, мд, ид, ид, ид, ид, ид,
RV					PHTH GENCHEM VOC	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300 SW8260B	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene Vinyl chloride	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 = 2.5 =	µg, µg, µg, mg mg, µв, µв, µв, µв, µв,
RV					PHTH	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene Vinyl chloride Bis(2-ethylhexyl)phthalate	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 = 2.5 = 0.091 J	µg, µg, µg, mg mg, µв, µв, µв, µв, µв, µв,
RV					PHTH GENCHEM VOC	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300 SW8260B	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene Vinyl chloride Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 = 2.5 = 0.091 J 0.111 J	нд, нд, нд, тд, нд, нд, нд, нд, нд, нд, нд, нд, нд,
RV					PHTH GENCHEM VOC	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300 SW8260B	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene Vinyl chloride Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 = 2.5 = 0.091 J 0.11 J 0.12 J	µg,/ µg,/ µg,/ mg, µg,/ µg,/ µg,/ µg,/ µg,/ µg,/ µg,/ µg
RV					PHTH GENCHEM VOC	SW8260B-SIM SW8315A SW8270C-SIM 4500-NH3F E300 SW8260B	1,4-Dioxane (P-Dioxane) Formaldehyde Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Ammonia as Nitrogen (N) Fluoride Chlorotrifluoroethylene cis-1,2-Dichloroethene Dichlorodifluoromethane Isopropanol trans-1,2-Dichloroethene Trichloroethene Vinyl chloride Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate	0.59 J 100 = 0.11 J 0.077 J 0.046 J 0.13 = 2.3 = 49 = 0.6 J 61 J 31 = 49 = 2.5 = 0.091 J 0.111 J	нд, нд, нд, нд, нд, нд, нд, нд, нд, нд,

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TABLE 3-2 Validated Analytical - Detections Only

NASA Area I LOX and Area II Groundwater Monitorina Report. Third Quarter 2016. SSFL. Ventura County. California

Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Unit
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	1.2 =	μg/
						SW8260B	cis-1,2-Dichloroethene	150 J	μg/
							trans-1,2-Dichloroethene	12 =	μg/
							Trichloroethene	0.46 J	μg/
							Vinyl chloride	48 =	μg/
						SW8315A	Formaldehyde	61 =	μg/
					SVOC	E1625C	n-Nitrosodimethylamine	0.017 =	μg/
					PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.12 J	μg/
							Butyl benzyl phthalate	0.061 J	μg/
					HC	SW8015B	Diesel Range Organics (C15-C20)	50 =	<u> </u>
					110	34400135	Diesel Range Organics (C8-C30)	50 =	<u> </u>
							GRO (C4-C12)	53 =	<u> </u>
					GENCHEM	4500 NH25			
					GENCHEIVI	4500-NH3F	Ammonia as Nitrogen (N)	0.059 =	mg/
						E300	Fluoride	0.33 =	mg/
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Trichloroethene	1.2 J	μg/
					INO	SW6020	Calcium, dissolved	147 =	mg/
							Iron, dissolved	0.0704 =	mg,
							Magnesium, dissolved	25 =	mg,
							Manganese, dissolved	0.00576 =	mg,
							Potassium, dissolved	4.01 =	mg,
							Sodium, dissolved	69.2 =	mg,
							Strontium, dissolved	0.595 =	mg,
			= /22 /22 4				Zinc, dissolved	0.76 =	mg
	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1-Dichloroethene	3.8 J	μg/
							Benzene	0.18 J	μg,
							cis-1,2-Dichloroethene	1300 =	μg/
							Toluene	0.33 J	μg,
							trans-1,2-Dichloroethene	58 =	μg,
							Trichloroethene	8.1 =	μg/
								23 =	
				-	1110	CIMCODO	Vinyl chloride		μg,
					INO	SW6020	Calcium, dissolved	91.7 =	mg
							Iron, dissolved	1.73 =	mg
							Magnesium, dissolved	19.2 =	mg
							Manganese, dissolved	0.0417 =	mg
							Potassium, dissolved	3.32 =	mg
							Sodium, dissolved	52.5 =	mg
							Strontium, dissolved	1.01 =	mg
							Zinc, dissolved	0.174 =	mg
TA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1-Dichloroethene	9.7 J	μg,
							cis-1,2-Dichloroethene	2900 =	μg/
							trans-1,2-Dichloroethene	270 =	μg,
							Trichloroethene	490 =	μg,
							Vinyl chloride	130 =	μg,
						SW8315A	Formaldehyde	34 J	μg,
					SVOC	E1625C	n-Nitrosodimethylamine	0.019 =	μg,
					HC	SW8015B	Diesel Range Organics (C8-C11)	17 J	де, де,
						355155	Diesel Range Organics (C8-C30)	17 J	μg,
							GRO (C4-C12)	200 =	μg/
					CENCHEM	4500 NH25			
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.083 =	mg
						E300	Fluoride	0.31 =	mg
			0/15/55			SW9040C	pH	6.92 =	pH u
S	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Isopropanol	230 =	μg,
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.088 =	mg
						E300	Fluoride	0.7 =	mg
	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	Acetone	13 J	μg,
							Isopropanol	410 =	μg,
					PHTH	SW8270C-SIM	Dimethyl phthalate	0.39 J	μg/
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.09 =	mg,
	l .	T.				E300	Fluoride	0.97 =	mg

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TABLE 3-2 Validated Analytical - Detections Only

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

ite	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Uni
os	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E900	Alpha, Gross	5.9 =	pCi/
						E900	Beta, Gross	5.79 =	pCi/
							Gross Beta, decanted	7.91 =	pCi,
						E901.1	Bismuth-214	523 =	pCi,
							Bismuth-214, dissolved	418 =	pCi
							Lead-214	558 =	pCi
							Lead-214, dissolved	457 =	pCi
						Radioisotopes	Uranium-233/-234	1.22 =	pCi
						- itadioisotopes	Uranium-238	0.559 =	pCi
				-	CENCUENA	F200			
			0/10/2015		GENCHEM	E300	Fluoride	4.8 =	mg
	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Isopropanol	69 J	μg,
					RAD	E900	Beta, Gross	7.19 =	pCi
							Gross Beta, decanted	5.62 =	pCi
						E901.1	Bismuth-214	466 =	pCi
							Bismuth-214, dissolved	393 =	pCi
							Lead-214	509 =	pCi
							Lead-214, dissolved	413 =	pCi
						Radioisotopes	Uranium-233/-234	0.992 =	pCi
							Uranium-238		
				}	CENCUENA	Radioisotopes		0.352 =	pCi
_			= 1: - 1		GENCHEM	E300	Fluoride	4.8 =	mg
.F	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.9 J	μg,
						SW8260B	cis-1,2-Dichloroethene	15 =	μg,
							trans-1,2-Dichloroethene	1.4 J	μg,
							Trichloroethene	0.91 J	μg,
							Vinyl chloride	5.3 =	μg,
					SVOC	E1625C	n-Nitrosodimethylamine	0.012 =	μg,
				-	GENCHEM	E300	Fluoride	0.13 =	mg
					GENCITEIVI	SW9040C	pH	6.54 =	
_			= /+ 0 /00+ 6		0511011514				pH u
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.043 J	mg
						E300	Fluoride	0.24 =	mg
						SW9040C	pH	6.73 =	pH u
	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8315A	Formaldehyde	32 J	μg,
					SVOC	E1625C	n-Nitrosodimethylamine	0.013 =	μg,
				=	НС	SW8015B	Diesel Range Organics (C15-C20)	14 J	μg,
						31100135	Diesel Range Organics (C8-C30)	14 J	μg,
					GENCHEM	4500-NH3F		0.051 =	
					GENCHEIVI		Ammonia as Nitrogen (N)		mg
						E300	Fluoride	0.11 =	mg
						SW9040C	pH	9.07 =	pH u
	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8315A	Formaldehyde	30 J	μg,
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.14 =	mg
						E300	Fluoride	0.12 =	mg
						SW9040C	pH	7.27 =	pH u
	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.56 J	μд
			1, 20, 2010	.,		SW8260B	cis-1,2-Dichloroethene	17 =	μд
						34432000			
							Isopropanol	160 =	μg,
							Toluene	0.33 J	μg,
							trans-1,2-Dichloroethene	2 J	μg,
							Vinyl chloride	0.36 J	μg
	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.62 J	μg,
						SW8260B	cis-1,2-Dichloroethene	23 =	μg,
							Isopropanol	190 =	μg,
							trans-1,2-Dichloroethene	5 J	μg
	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Toluene	0.37 J	μg
	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethene	1.4 J	
	3F-09UC	21 020004013003	//20/2016	14	VUC	3449700P			μg,
							cis-1,2-Dichloroethene	400 =	μg,
							Isopropanol	88 J	μg,
							trans-1,2-Dichloroethene	24 =	μg,
							Trichloroethene	150 =	μg,
							Vinyl chloride	0.52 =	μg,
	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethene	2.9 J	μg
	2. 0500		., 20, 2010			1	cis-1,2-Dichloroethene	650 =	µв,
							Isopropanol	86 J	μg
							trans-1,2-Dichloroethene	24 =	μg,
							Trichloroethene	340 =	μg,
						1	Vinyl chloride	3.6 =	μg

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TABLE 3-2

Validated Analytical - Detections Only

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Type	Class	Method	Analyte	Final Result	Units
SPA	HAR-05	HAR05GW01S006	7/15/2016	Ζ	VOC	SW8260B	Isopropanol	75 J	μg/L
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.025 J	mg/L
						E300	Fluoride	0.22 =	mg/L
						SW9040C	рН	7.04 =	pH units
	HAR-23	HAR23GW01S006	7/18/2016	Ζ	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.54 J	μg/L
						SW8260B	Trichloroethene	1.1 J	μg/L
					SVOC	E1625C	n-Nitrosodimethylamine	0.0078 J	μg/L
					GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.03 J	mg/L
						E300	Fluoride	0.33 =	mg/L
							Nitrogen, Nitrate (as N)	0.4 =	mg/L
						SW9040C	рН	6.98 =	pH units

The results in *italic gray* font were reported below their respective screening level values.

The results in ${\bf bold}$ font was reported at or above the respective screening level value.

μg/L = microgram(s) per liter

FD = field duplicate sample <u>Class Abbreviations:</u>

ID = identification number ENER_PROP = energetics and propellants PHTH = phthalates mg/L = milligram(s) per liter GENCHEM = general chemistry RAD = radionuclide

N = normal sample HC = hydrocarbons SVOC = semivolatile organic compound pCi/L = picocurie(s) per liter INO = inorganics VOC = volatile organic compound

Field Duplicate Associations: Site Abbreviations:

WS04AGW01S006 = WS04AGW01D006 ALF = Alfa Area PLF = Propellant Load Facility
BRV = Bravo Area SRZ = Southern Buffer Zone

BRV = Bravo Area SBZ = Southern Buffer Zone
CA = Coca Area SPA = Storage Propellant Area

DTA = Delta Area

Validation Flags:

J

= Analyte is present but the reported quantitation is estimated.

Reported quantitation represents the most accurate concentration for the given analyte.

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

ALF	Location HAR-11	Sample ID HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	Type N N N N N N N N N N N N N N N N N N	Class	Method SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	Analyte 1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene	Final Result 0.4 U 0.3 U 0.41 U 0.45 U 0.38 U 0.28 U 0.43 U 0.46 U 0.51 U	Units μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N N N N N N N N N N N N N N N	VOC VOC VOC VOC VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.3 U 0.41 U 0.45 U 0.38 U 0.28 U 0.43 U 0.46 U	μg/L μg/L μg/L μg/L μg/L μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N N N N N N N N N N N N N N N	VOC VOC VOC VOC VOC VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.41 U 0.45 U 0.38 U 0.28 U 0.43 U 0.46 U	μg/L μg/L μg/L μg/L μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N N N N N N N N N N N N N N N	VOC VOC VOC VOC VOC VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.45 U 0.38 U 0.28 U 0.43 U 0.46 U	μg/L μg/L μg/L μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N N N N N N N N N N N N N N N	VOC VOC VOC VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.38 U 0.28 U 0.43 U 0.46 U	μg/L μg/L μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N N	VOC VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B SW8260B	1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.28 U 0.43 U 0.46 U	μg/L μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N N	VOC VOC VOC VOC	SW8260B SW8260B SW8260B SW8260B	1,1-Dichloroethene 1,1-Dichloropropene	0.43 U 0.46 U	μg/L
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N	VOC VOC VOC	SW8260B SW8260B SW8260B	1,1-Dichloropropene	0.46 U	
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N N	VOC VOC	SW8260B SW8260B			
ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N	VOC VOC	SW8260B		U.31 U	μg/L
ALF ALF ALF ALF ALF ALF ALF ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016 7/19/2016	N N N	VOC		1,2,3-Trichloropropane	0.64 U	μg/L
ALF ALF ALF ALF ALF ALF ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016 7/19/2016	N N			1,2,4-Trichlorobenzene	0.5 U	μg/L
ALF ALF ALF ALF ALF ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016	N		SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
ALF ALF ALF ALF ALF	HAR-11 HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007 HAR11GW01S007	7/19/2016		VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
ALF ALF ALF ALF	HAR-11 HAR-11 HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007		N	VOC	E504.1	1,2-Dibromo-3-chloropropane	0.0023 U	μg/L
ALF ALF ALF	HAR-11 HAR-11 HAR-11	HAR11GW01S007	.,15,2010	N	VOC	E504.1	1,2-Dibromoethane (EDB)	0.002 U	μg/L
ALF ALF	HAR-11 HAR-11 HAR-11		7/19/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
ALF ALF	HAR-11 HAR-11		7/19/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
		HAR11GW01S007	7/19/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.42 U	μg/L μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L μg/L
ALF	HAR-11	HAR11GW015007	7/19/2016	N	VOC	SW8260B SW8260B	1,3-Dichloropenzene 1,3-Dichloropropane	0.4 U	μg/L μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B SW8260B	1,4-Dichlorobenzene	0.43 U	
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B-SIM	1	2.7 =	μg/L
ALF	HAR-11	HAR11GW01S007		N N	VOC		1,4-Dioxane (P-Dioxane)	2.7 = 0.36 U	μg/L
ALF	HAR-11 HAR-11	HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016	N N	VOC	SW8260B SW8260B	2,2-Dichloropropane	0.36 U 2.2 U	μg/L
			7/19/2016		VOC		2-Butanone (MEK) 2-Chloro-1,1,1-trifluoroethane	2.2 U	μg/L
ALF	HAR-11 HAR-11	HAR11GW01S007		N	VOC	SW8260B	* *		μg/L
ALF		HAR11GW01S007	7/19/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N		SW8260B	2-Hexanone	2.1 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Acetone	31 J	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	5.6 =	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	Ν	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8315A	Formaldehyde	23 J	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Isopropanol	170 =	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.24 U	μg/L μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.37 U	
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B SW8260B	Trichloroethene	0.25 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B SW8260B	Trichlorofluoromethane	1.7 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	VOC	SW8260B SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
					VOC			0.46 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N		SW8260B	Vinyl chloride		μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	, Third Quarter 2	016, SSFL, Venti	ura County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
ALF		HAR11GW01S007	7/19/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.8 U	μg/L
ALF		HAR11GW01S007	7/19/2016	N	PHTH		Bis(2-ethylhexyl)phthalate	0.11 J	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	PHTH		Butyl benzyl phthalate	0.052 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	PHTH	SW8270C-SIM	Diethyl phthalate	0.21 J	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	PHTH	SW8270C-SIM	Dimethyl phthalate	0.12 J	μg/L
ALF		HAR11GW01S007	7/19/2016	N	PHTH		Di-n-butyl phthalate	0.078 U	μg/L
ALF		HAR11GW01S007	7/19/2016	N	PHTH		Di-n-octyl phthalate	0.047 U	μg/L
ALF ALF		HAR11GW01S007 HAR11GW01S007	7/19/2016 7/19/2016	N N	HC HC	SW8015B SW8015B	Diesel Range Organics (C12-C14) Diesel Range Organics (C15-C20)	28 J 300 =	μg/L μg/L
ALF		HAR11GW01S007	7/19/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	130 =	μg/L
ALF		HAR11GW01S007	7/19/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	50 U	μg/L
ALF		HAR11GW01S007	7/19/2016	N	НС	SW8015B	Diesel Range Organics (C8-C30)	460 =	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	HC	SW8015B	GRO (C4-C12)	50 U	μg/L
ALF		HAR11GW01S007	7/19/2016	N	HC	SW8015B	ORO (C31-C40)	50 U	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	HC	SW8015B	TPH C-7	50 U	μg/L
ALF		HAR11GW01S007	7/19/2016	N	GENCHEM	E300	Fluoride	0.45 =	mg/L
ALF		HAR11GW01S007	7/19/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
ALF ALF		HAR11GW01S007 HAR11GW01S007	7/19/2016	N N	ENRG_PROP	SW8330A SW8330A	1,3-Dinitrobenzene Nitrobenzene	0.056 U 0.062 U	μg/L
ALF		HAR11GW01S007	7/19/2016 7/19/2016	N	ENRG_PROP ENRG_PROP	E314	Perchlorate	0.062 U	μg/L μg/L
ALF		HAR11GW01S007	7/19/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.41 U	μg/L mg/L
ALF	HAR-11	HAR11GW01S007	7/28/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.38 =	mg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
ALF ALF	HAR-20 HAR-20	HAR20GW01S006 HAR20GW01S006	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.46 U 0.51 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.51 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	E504.1	1,2-Dibromo-3-chloropropane	0.0024 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	E504.1	1,2-Dibromoethane (EDB)	0.002 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
ALF ALF	HAR-20 HAR-20	HAR20GW01S006 HAR20GW01S006	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	1,3,5-Trimethylbenzene 1,3-Dichlorobenzene	0.28 U 0.4 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.4 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC		1,4-Dioxane (P-Dioxane)	2.1 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
ALF ALF	HAR-20 HAR-20	HAR20GW01S006 HAR20GW01S006	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	4-Methyl-2-pentanone (MIBK) Acetone	4.4 U 6 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B SW8260B	Benzene	0.14 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Bromomethane	3.9 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Chloromethane	2.3 U	μg/L
ALF ALF	HAR-20 HAR-20	HAR20GW01S006 HAR20GW01S006	7/12/2016	N	VOC	SW8260B SW8260B	Chloromethane Chlorotrifluoroethylene	1.8 U 1.8 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	cis-1,2-Dichloroethene	1.8 U 44 =	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L μg/L
ALF		HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8315A	Formaldehyde	24 J	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	,	Report	, Third Quarter 2	016, SSFL, Ventu	ura County, California		
C:A-		Commis ID	Sample	T	Class	Bankh and	Analisa	Final Bassile	11-14-
Site ALF	Location HAR-20	Sample ID HAR20GW01S006	7/12/2016	Type N	Class VOC	Method SW8260B	Analyte Isopropanol	Final Result 37 U	Units μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	Ν	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	12 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Trichloroethene	12 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
ALF ALF	HAR-20 HAR-20	HAR20GW01S006	7/12/2016	N N	VOC SVOC	SW8260B E1625C	Vinyl chloride	1.6 = 0.0029 U	μg/L
ALF	HAR-20	HAR20GW01S006 HAR20GW01S006	7/12/2016 7/12/2016	N	SVOC	SW8315A	n-Nitrosodimethylamine Unsymetrical Dimethyl Hydrazine	0.0029 U 0.25 UJ	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.25 UJ 0.22 J	μg/L μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH		Butyl benzyl phthalate	0.051 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH	SW8270C-SIM	Diethyl phthalate	0.051 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH		Dimethyl phthalate	0.045 J	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH		Di-n-butyl phthalate	0.19 J	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH		Di-n-octyl phthalate	0.046 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	21 J	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	490 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	Ν	HC	SW8015B	Diesel Range Organics (C21-C30)	280 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	50 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	790 =	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	GRO (C4-C12)	50 UJ	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	ORO (C31-C40)	34 J	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	HC	SW8015B	TPH C-7	50 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.06 =	mg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	GENCHEM	E300	Fluoride	0.36 =	mg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.056 U	μg/L
ALF	HAR-20	HAR20GW01S006	7/12/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.062 U	μg/L
ALF ALF	HAR-20 RD-49C	HAR20GW01S006 RD49CGW01S006	7/12/2016	N N	ENRG_PROP VOC	E314 SW8260B	Perchlorate 1,1,1,2-Tetrachloroethane	0.41 U 0.4 U	μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016 7/19/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.4 U	μg/L μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.3 U	μg/L μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC		1,1,2-Trichloroethane	0.38 U	μg/L
ALF		RD49CGW01S006	7/19/2016	N	VOC		1,1-Dichloroethane	0.28 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	E504.1	1,2-Dibromo-3-chloropropane	0.0023 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	E504.1	1,2-Dibromoethane (EDB)	0.002 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
ALF ALF	RD-49C RD-49C	RD49CGW01S006 RD49CGW01S006	7/19/2016		VOC	SW8260B SW8260B	1,3,5-Trimethylbenzene 1,3-Dichlorobenzene	0.28 U 0.4 U	μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016 7/19/2016	N	VOC	SW8260B SW8260B	1,3-Dichloropenzene	0.4 U	μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016	N N	VOC	SW8260B SW8260B	1,4-Dichlorobenzene	0.3 U 0.43 U	μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016	N	VOC		1,4-Dichioropenzene 1,4-Dioxane (P-Dioxane)	0.43 U 0.91 J	μg/L μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L μg/L
ALF	RD-49C RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
		1			1	1	II.		

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Sept Method Sample D				Sample	_					
## 80 A-90 RAP-050 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Acronne 0.14 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Bremotherwaren 0.14 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Bremotherwaren 0.14 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Bremotherwaren 0.24 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Bremotherwaren 0.24 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Remotherwaren 0.24 U ## 80 A-90 RAPICOCONTISTOR 7779/7016 N VOC SW82508 Rapicocontistoristoristoristoristoristoristoristo								-		Units
ALF R. D. D. D. D. D. D. D.								, , , ,		μg/L
ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Promobenzene 0.9.9 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Promobenzene 0.0.9 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Bromobenzene 0.0.0 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Bromobenzene 0.0.0 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Bromobenzene 0.0.0 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Bromobenzene 0.0.0 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Bromobenzene 0.0.0 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.1 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.1 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.1 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.1 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.1 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.4 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.4 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.4 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.4 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.4 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinocethane 0.0.2 U ALF R D4-9C (INDECOMESSOR) 7/39/2016 N VOC SW22008 Cilcinoceth										μg/L
ALE B. 04-95. (0.949CQM)93506										μg/L
ALF R. D. 9-05. (INDECOMPSISOR)										μg/L
ALF R. D9-C MOSCOWISSION 7/19/2016 N VOC SW82008 Remembers 3.5 U ALF R. D9-C MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 1.4 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 1.4 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 1.4 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 S U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Carbon tetrachroride 0.2 S U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Ditermochromethale 0.2 S U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Ditermochromethale 0.2 S U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Ditermochromethale 0.4 E U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.4 E U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.4 E U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.4 E U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.3 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.3 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.3 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N VOC SW82008 Chiralordifluoromethale 0.3 U ALF R. D9-C R. MOSCOWISSION 7/19/2016 N										μg/L μg/L
ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Romomentance 0.3 U ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.1 T ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016 N VOC SWA2006 Chloroberuscus 0.3 V ALF R.D96C ROM-SCOW)53006 7/19/2016										μg/L
ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Carbon tetrachloride 0.2.3 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 2.3 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 2.3 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 1.8 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 1.8 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 1.8 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 1.8 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 1.8 U ALF B. AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 0.2 SV AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 0.2 SV AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 0.2 SV AB-4C RESPECTIVISIONE 7/19/2016 N VOC SW82006 Childronethane 0.4 Childroneth										μg/L
ALF R.0-9-66 R.0-9-5CW (19506 719/2016 N										μg/L
ALF B. 80-96 (BA95CWIS1006 1719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF B. 80-96 (BA95CWIS1006 N 719)2016 N VOC SW82600 (Chloromethane 1.8 U ALF										μg/L
ALF B AN-40C RN950CWN15006 7/19/2016 N VOC SW82006 Chlororethrane										μg/L
ALF B. AB-45 (BA-950W15006 7/19/2016 N VOC SW82006 Chlororifluoreethylene 1.8 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82006 cl. 3.1,3 Chloriflorepropene 0.25 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 cl. 3.1,3 Chloriflorethene 0.45 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.46 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Dibromonethane 0.3 U Al- ALF B. AB-46 (BA950W05006 7/19/2016 N VOC SW82008 Di	ALF	RD-49C	RD49CGW01S006		N	VOC				μg/L
ALF RB-495C RB-495C M090050006 7/19/2016 N VOC SW82608 bit Differenterhane 0.25 U ALF ALF RB-495C M090050006 7/19/2016 N VOC SW82608 bit Differenterhane 0.46 U AG ALF RB-495C M09000071006 7/19/2016 N VOC SW82608 bit Differenterhane 0.45 U AG ALF RB-495C M09000071006 7/19/2016 N VOC SW82608 bit Differenterhane 0.45 U AG ALF RB-495C M0900000000 7/19/2016 N VOC SW82608 bit Differenterhane 0.31 U AG ALF RB-495C M0900000000 7/19/2016 N VOC SW82608 bit Differenterhale 0.32 U AG ALF RB-495C M0900000000 7/19/2016 N VOC SW82608 bit Differenterhale 0.32 U AG ALF RB-495C M09000000000 7/19/2016 N VOC SW82608 bit Differenthale Sopropanol 3.32 U AG ALF RB-495C M09000000000 7/19/2016 N VOC SW82608 bit Differenthale Sopropanol 0.32 U AG AG	ALF	RD-49C			N	VOC	SW8260B		1.8 U	μg/L
ALF B.049C B.049CW015006 7/19/2016 N	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	34 =	μg/L
ALF BD-49C BD-49CW015006 7/19/2016 N VOC SW2520B Discrommentane 0.48 U ALF BD-49C BD40CW015006 7/19/2016 N VOC SW2520B Ethylbersene 0.14 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Ethylbersene 0.14 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Horstonobutadiene 0.32 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Horstonobutadiene 0.32 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Mostporter cloride 0.64 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Methylere cloride 0.64 U ALF BD49C BD40CW015006 7/19/2016 N VOC SW2520B Methylere cloride 0.64 U ALF BD49C BD49CW015006 7/19/2	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Dichlorodiffucromethane 0.45 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Reachford/buddere 0.32 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Bogroganol 3.7 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Potractifucroretaine 0.23 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Potractifucroretaine 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Potractifucroretaine 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Potractifucroretaine 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Eve-But/therene 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Eve-But/therene 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Eve-But/therene 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269 Eve-But/therene 0.25 U AFF R.0-96C R.0-96CWU35006 7/19/2016 N VOC SW25269	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
ALF RA 9-80 RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Ethylemezene 0.14 U ALF RA 946 RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Exemplication 49 J ALF RA 946 RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Beachinorization 37 U ALF RA 945 (RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Inchange (MISSOS) 7/19/2016 N VOC SW8250B Methylen chloride 0.58 U ALF RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Methylen chloride 0.64 U ALF RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Methylen chloride 0.63 U ALF RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Methylen chloride 0.63 U ALF RA 9450 (MISSOS) 7/19/2016 N VOC SW8250B Methylen chloride 0.23 U ALF RA 9450 (MISSOS) 7/19/2016 N VOC SW	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW8215A Formaldehyde 9.32 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Hexachirorobundiene 0.32 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Inproprightenene 0.58 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Inproprightenene 0.58 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Methylmer chloride 0.64 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Methylmer chloride 0.64 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Methylmer chloride 0.64 U ALF R0-94C R0-94CWINIS006 7/19/2016 N VOC SW82608 Methylmer chloride 0.64 U ALF R0-94C R0-	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
ALF RO-49C RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Hexachirorobutadene 0.32 U ALF RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Isoproprophencene 0.58 U ALF RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Improprophencene 0.58 U ALF RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Improprophencene 0.31 U ALF RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Improprophencene 0.12 U ALF RO-49C (MOSIOSOB) 7/19/2016 N VOC SW82260B Not Hurly the Hu			RD49CGW01S006		N		SW8260B	·		μg/L
ALF RD-49C R0-49CCW01S006 7/19/2016 N VOC SW25080 Isopropapherenee 0.58 U ALF R0-49C R0-49CCW01S006 7/19/2016 N VOC SW25060 Isopropherenee 0.58 U ALF R0-49C R0-49CCW01S006 7/19/2016 N VOC SW25060 Methylene chioride 0.64 U ALF R0-49C R0-49CCW01S006 7/19/2016 N VOC SW25060 Methylene chioride 0.64 U ALF R0-49C R0-49CCW01S006 7/19/2016 N VOC SW25060 Methylene chioride 0.64 U ALF R0-49C R0-49CCW01S006 7/19/2016 N VOC SW25060 -Phylytherene 0.23 U ALF R0-49C R0-49CW01S006 7/19/2016 N VOC SW25060 Phylytherene 0.15 U ALF R0-49C R0-49CW01S006 7/19/2016 N VOC SW25060 Phylytholene 0.15 U ALF R0-49C R0-49CW01S006								·		μg/L
ALF R. PA-9C RAP-9CCW015006 7/19/2016 N VOC SW2250B R-PA-9CW015006 7/19/2016 N VOC SW2250B R-PA-										μg/L
ALF RD-49C RM015006 7/19/2016 N VOC SW82608 Inp-Nylenes 0.3 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 Methylene chloride 0.64 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 Methylene chloride 0.64 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 n-Propylenzene 0.23 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 n-Propylenzene 0.17 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 n-Propylenzene 0.12 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 Pertachloroethane 1.5 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 Pertachloroethane 0.25 U ALF RB-49C RM015006 7/19/2016 N VOC SW82608 Pertachloroethane 0.25 U ALF R										μg/L
ALF RA-95 RAPSCEWISSON 7/19/2016 N VOC SW2508 Methylenechloride 0.64 U										μg/L
ALF RD-49C RD-49C (W015006 7/19/2016 N VOC SW82608 Nethyl-ter-butyl Eher (MTRE) 0.31 U ALF RD-49C (R040015006 7/19/2016 N VOC SW82608 P-brythberzene 0.23 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greene 0.23 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greene 0.23 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greene 0.15 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greenpytholuene 0.15 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greenpytholuene 0.25 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greenpytholuene 0.25 U ALF RD-49C (R040015006) 7/19/2016 N VOC SW82508 P-greenpytholuene 0.24 U										μg/L
ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 n-butythenzene 0.23 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 e-Ygene 0.23 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 e-Pretachiorecthane 1.5 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 p-Protachiorecthane 0.15 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 p-boprophtoluene 0.25 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 p-boprophtoluene 0.25 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 p-testurybenzene 0.25 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW82608 Trans-1,2-Dichiorechene 0.24 U ALF RD-49C RD49CW015006										μg/L
ALF RD-49C RD49CQCW015006 7/19/2016 N VOC SW82608 n-Propylberzene 0.17 U ALF RD-49C RD49CQW015006 7/19/2016 N VOC SW82608 Pertachloroethane 1.5 U ALF RD-49CCW015006 7/19/2016 N VOC SW82608 Pertachloroethane 0.16 U ALF RD-49CCW015006 7/19/2016 N VOC SW82608 Pertachloroethane 0.15 U ALF RD-49C RD49CGW015006 7/19/2016 N VOC SW82608 Styrene 0.17 U ALF RD-49C RD49CGW015006 7/19/2016 N VOC SW82608 Test-alchloroethene 0.24 U ALF RD-49C RD49CGW015006 7/19/2016 N VOC SW82608 Test-alchloroethene 2.4 J ALF RD-49C RD49CGW015006 7/19/2016 N VOC SW82608 Trichloroethene 0.25 U ALF RD-49C RD49CGW015006 7/19/2016 N										μg/L μg/L
ALF RD-49C RD49C (R09CGW015006 7/19/2016 N VOC SW82608 exhethor exhethore than 1.5 U ALF RD-49C R09CGW015006 7/19/2016 N VOC SW82608 betopropytroluene 0.15 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 betopropytroluene 0.25 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 Styree 0.17 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 Styree 0.28 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 Toluene 0.24 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 Toluene 0.25 U ALF R0-49C R049CGW015006 7/19/2016 N VOC SW82608 Trichlorothene 0.25 U ALF R0-49C R049CGW015006 7/19/2016 N <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>μg/L μg/L</td>										μg/L μg/L
ALF RD-49C R049GCW01S006 7/19/2016 N VOC SW82608 Petntachloroethane 1.5 U ALF RD-49C R049CGW01S006 7/19/2016 N VOC SW82608 p-topropytibulene 0.15 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Styrene 0.25 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Styrene 0.28 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Tetrachloroethene 0.38 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Tetrachloroethene 0.24 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Trans-12-Dichloroethene 0.25 U ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Trichloroethene 0.39 U ALF RD-49C RD49CGW01S006										μg/L μg/L
ALF RD-96 RO-96C ROMPGENIOSD06 7/19/2016 N VOC SW8260B sec-BurlyBnezene 0.25 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B sec-BurlyBnezene 0.25 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B styrene 0.17 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Tert-BurlyBnezene 0.28 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Tert-BurlyBnezene 0.24 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Trans-1,2-Dichloroptene 0.24 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Trans-1,2-Dichloroptene 0.25 U ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Trichloroptene 0.39 J ALF RD-96C RD-96CW015006 7/19/2016 N VOC SW8260B Trichloroptene 0.25 U ALF RD-96C RD-96CW015006 7/19/2016 N								*		μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW82608 Sec-Butylbenzene 0.25 U										μg/L
ALF RD-49C RD-49CKW015006 7/19/2016 N VOC SW82608 Syrene 0.17 U ALF RD-49C RD-49CKW015006 7/19/2016 N VOC SW82608										μg/L
ALF RD-49C RD-49CKW015006 7/19/2016 N VOC SW82608 tert-Buylbenzene 0.28 U										μg/L
ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B Toluene 0.24 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B trans-1,2-Dichloroethene 2.4 J ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B Trichloroethene 0.39 J ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B Trichloromethane 1.7 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B Trichloromethane (Chloroform) 0.46 U ALF RD-49C RD49CW015006 7/19/2016 N VOC SW8260B Trichloromethane (Chloroform) 0.46 U ALF RD-49C RD49CW015006 7/19/2016 N SVOC SW8260B Trichloromethane (Chloroform) 0.46 U ALF RD-49C RD49CGW015006 7/19/2016 N SVOC SW8260B Trichloromethane (Chloroform) 0.48 U ALF <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td>μg/L</td></td<>								-		μg/L
ALF RD-49C RD49GW01S006 7/19/2016 N VOC SW8260B trans-1,2-Dichloroethene 2,4 J ALF RD-49C RD49GW01S006 7/19/2016 N VOC SW8260B Trichloroethene 0.25 U ALF RD-49C RD49GW01S006 7/19/2016 N VOC SW8260B Trichloroethene 1.7 U ALF RD-49C RD49GW01S006 7/19/2016 N VOC SW8260B Trichloroethene 1.7 U ALF RD-49C RD49GW01S006 7/19/2016 N VOC SW8260B Trichloroethene (Chloroform) 0.46 U ALF RD-49C RD49CW01S006 7/19/2016 N VOC SW8260B Vinyl chloride 0.3 U ALF RD-49C RD49CW01S006 7/19/2016 N SVOC SW8315A NITrosodimethylamine 0.029 U ALF RD-49C RD49CW01S006 7/19/2016 N PHTH SW8270C-SIM Blityl bentyl phthalate 0.12 J ALF RD-49C <	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
ALF RD-49C RD49GW015006 7/19/2016 N VOC SW82608 Trans-1,3-Dichloropropene 0.25 U ALF RD-49C RD49GGW015006 7/19/2016 N VOC SW82608 Trichloroethene 0.391 ALF RD-49C RD49GGW015006 7/19/2016 N VOC SW82608 Trichloromethane (Chloroform) 0.46 U ALF RD-49C RD49GGW015006 7/19/2016 N VOC SW82608 Trichloromethane (Chloroform) 0.46 U ALF RD-49C RD49GGW015006 7/19/2016 N SVOC SW82608 Virinchloride 0.3 U ALF RD-49C RD49GGW015006 7/19/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine 0.08 U ALF RD-49C RD49GGW015006 7/19/2016 N PHTH SW8270C-SIM Instry-thylp-thylpathyl	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
ALF RD-49C R049GCW015006 7/19/2016 N VOC SW82608 Trichloroethene 0.39 J ALF RD-49C R049GGW015006 7/19/2016 N VOC SW82608 Trichloroffuoromethane (Chlorofrm) 0.46 U ALF RD-49C R049GGW015006 7/19/2016 N VOC SW82608 Trichloromethane (Chlorofrm) 0.46 U ALF RD-49C R049GGW015006 7/19/2016 N VOC SW8260B Trichloromethane (Chlorofrm) 0.029 U ALF RD-49C R049GGW015006 7/19/2016 N SVOC E1625C n-Nitrosodimethylamine 0.029 U ALF RD-49C R049GGW015006 7/19/2016 N PHTH SW8270C-SIM Bisi(2-ethylnexyl)phthalate 0.15 J ALF RD-49C R049GGW015006 7/19/2016 N PHTH SW8270C-SIM Biethyl phthalate 0.01 J ALF RD-49C R049GGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.01 J <t< td=""><td>ALF</td><td>RD-49C</td><td>RD49CGW01S006</td><td>7/19/2016</td><td>N</td><td>VOC</td><td>SW8260B</td><td>trans-1,2-Dichloroethene</td><td>2.4 J</td><td>μg/L</td></t<>	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	2.4 J	μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N VOC SW8260B Trichloromethane 1.7 U	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
ALF RD-49C RD49CW01S006 7/19/2016 N VOC SW8260B Trichloromethane (Chloroform) 0.46 U	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	VOC	SW8260B	Trichloroethene	0.39 J	μg/L
ALF RD-49C R049CGW015006 7/19/2016 N VOC SW8260B Vinyl chloride 0.3 U ALF R0-49C R049CGW015006 7/19/2016 N SVOC E1625C n-Nitrosodimethylamine 0.0029 U ALF R0-49C R049CGW015006 7/19/2016 N PHTH SW8270C-SIM Bis(2-ethylhexyl)phthalate 0.15 J ALF R0-49C R049CGW015006 7/19/2016 N PHTH SW8270C-SIM Bis(2-ethylhexyl)phthalate 0.12 J ALF R0-49C R049CGW015006 7/19/2016 N PHTH SW8270C-SIM Bis(2-ethylhexyl)phthalate 0.12 J ALF R0-49C R049CGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.051 U ALF R0-49C R049CGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF R0-49C R049CGW015006 7/19/2016 N HC SW80158 Diesel Range Organics (C15-C20 0.04 U <	ALF	RD-49C	RD49CGW01S006	7/19/2016	N		SW8260B	Trichlorofluoromethane	1.7 U	μg/L
ALF RD-49C RD49CGW015006 7/19/2016 N SVOC E1625C n-Nitrosodimethylamine 0.0029 U ALF RD-49C RA49CGW015006 7/19/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine 0.8 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270-SIM Butyl benzyl phthalate 0.15 J ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270-SIM Butyl benzyl phthalate 0.051 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270-SIM Diethyl phthalate 0.051 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270-SIM Diethyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270-SIM Diethyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW80158 Diesel Range Organics (C12-C14) 50 U			RD49CGW01S006							μg/L
ALF RD-49C RD49CKW015006 7/19/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine 0.8 U ALF RD-49C RD49CKW015006 7/19/2016 N PHTH SW8270C-SIM Bis[2-ethylhewyl)phthalate 0.15 J ALF RD-49C RD49CKW015006 7/19/2016 N PHTH SW8270C-SIM Diethyl phthalate 0.051 U ALF RD-49C RD49CKW015006 7/19/2016 N PHTH SW8270C-SIM Diethyl phthalate 0.044 U ALF RD-49C RD49CKW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CKW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CKW015006 7/19/2016 N HC SW80158 Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW80158 Diesel Range Organics (C21-C30) 69 =								·		μg/L
ALF RD-49C RD49CW015006 7/19/2016 N PHTH SW8270C-SIM Bis(2-ethylhexyl)phthalate 0.15 J ALF RD-49C RD49CW015006 7/19/2016 N PHTH SW8270C-SIM Butyl benzyl phthalate 0.021 J ALF RD-49C RD49CW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Dim-butyl phthalate 0.12 J ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C30) 69 =										μg/L
ALF RD-49C RD49GW01S006 7/19/2016 N PHTH SW8270C-SIM Butyl benzyl phthalate 0.12 J ALF RD-49C RD49GCW01S006 7/19/2016 N PHTH SW8270C-SIM Diethyl phthalate 0.051 U ALF RD-49C RD49GW01S006 7/19/2016 N PHTH SW8270C-SIM Dien-butyl phthalate 0.044 U ALF RD-49C RD49GW01S006 7/19/2016 N PHTH SW8270C-SIM Dien-butyl phthalate 0.046 U ALF RD-49C RD49GW01S006 7/19/2016 N PHTH SW8270C-SIM Dien-butyl phthalate 0.046 U ALF RD-49C RD49GGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49GGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 50 U ALF RD-49C RD49GGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 78 P										μg/L
ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Diethyl phthalate 0.051 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-butyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-butyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C30) 69 = ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C20) 78 = ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 =										μg/L
ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Dimethyl phthalate 0.044 U ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-butyl phthalate 0.12 J ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-butyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 69 = ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 70 P ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B ROisel Range Organics (C12-C20) 70 P <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>μg/L</td>										μg/L
ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-butyl phthalate 0.12 J ALF RD-49C RD49CGW015006 7/19/2016 N PHTH SW8270C-SIM Di-n-octyl phthalate 0.046 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 69 = ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 78 = ALF RD-49C RD49CGW015006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U										μg/L
ALF RD-49C RD49CSW01S006 7/19/2016 N PHTH SW8270C-SIM Di-n-octyl phthalate 0.046 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C20) 69 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 69 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B DIesel Range Organics (C8-C30) 78 =										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C12-C14) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 69 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C31) 9 J ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B DRO (C31-C40) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>μg/L</td>										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C15-C20) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 69 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C11) 9 J ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>μg/L μg/L</td>										μg/L μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C21-C30) 69 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C11) 9 J ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C										μg/L μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C11) 9 J ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B ORO (C31-C40) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CG										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B Diesel Range Organics (C8-C30) 78 = ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B ORO (C31-C40) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.064 U ALF RD-49C RD49CG										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B GRO (C4-C12) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B ORO (C31-C40) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006<										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B ORO (C31-C40) 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = A1 WS-04A WS04AGW01S0										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N HC SW8015B TPH C-7 50 U ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) 0.024 J ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = ALF RD-49C RD49CGW01S006 7/14/2016 N VOC SW8260B 1,1,1-2-Tetrachloroethane 0.4 U ALF RD-49C										μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Fluoride 0.18 = ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = ALF RD-49C RD49CGW01S006 7/14/2016 N VOC SW8260B 1,1,1,2-Tetrachloroethane 0.4 U ALF WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Trichloroethane 0.3 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.41 U A1 <td< td=""><td>ALF</td><td></td><td></td><td></td><td>N</td><td>HC</td><td></td><td></td><td>50 U</td><td>μg/L</td></td<>	ALF				N	HC			50 U	μg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) 0.053 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Z-Tetrachloroethane 0.4 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Tetrachloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U	ALF	RD-49C	RD49CGW01S006	7/19/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.024 J	mg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene 0.058 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Trichloroethane 0.4 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Tertachloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Trichloroethane 0.38 U A1 WS-04A		RD-49C	RD49CGW01S006	7/19/2016	N	GENCHEM	E300	Fluoride		mg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP SW8330A Nitrobenzene 0.064 U ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Trichloroethane 0.4 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Tetrachloroethane 0.3 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A <t< td=""><td></td><td></td><td>RD49CGW01S006</td><td></td><td>N</td><td></td><td></td><td></td><td></td><td>mg/L</td></t<>			RD49CGW01S006		N					mg/L
ALF RD-49C RD49CGW01S006 7/19/2016 N ENRG_PROP E314 Perchlorate 3.4 = A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW82608 1,1,1-Trichloroethane 0.4 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW82608 1,1,1-Trichloroethane 0.3 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A <td></td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td>,-</td> <td></td> <td>μg/L</td>						_		,-		μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1,2-Tetrachloroethane 0.4 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Trichloroethane 0.3 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Tetrachloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U						_				μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,1-Trichloroethane 0.3 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2,2-Tetrachloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2,2-Tetrachloroethane 0.41 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane 0.45 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1,2-Trichloroethane 0.38 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.28 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethane 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloroethene 0.43 U A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
A1 WS-04A WS04AGW01S006 7/14/2016 N VOC SW8260B 1,1-Dichloropropene 0.46 U										μg/L
										μg/L
A1 WS-U4A WSU4AGWU1SU06 7/14/2016 N VOC SW8260B 1,2,3-Trichlorobenzene 0.51 U										μg/L
_	A1	WS-04A	w504AGW01S006	//14/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

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Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Unit
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/l
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/l
A1 A1	WS-04A	WS04AGW01S006	7/14/2016 7/14/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U 1.2 U	μg/
A1 A1	WS-04A WS-04A	WS04AGW01S006 WS04AGW01S006	7/14/2016	N N	VOC	SW8260B SW8260B	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane (EDB)	0.36 U	μg/ μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,2-Distribution (EDB)	0.46 U	μg/ μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.40 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	µв/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.61 J	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Acetone	6 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8315A	Formaldehyde	120 =	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.003 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 UJ	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.093 J	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.072 J	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH		Diethyl phthalate	0.05 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH	SW8270C-SIM	Dimethyl phthalate	0.043 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH		Di-n-butyl phthalate	0.076 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	PHTH	SW8270C-SIM	Di-n-octyl phthalate	0.045 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/
	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg,

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Unit
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/l
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	ORO (C31-C40)	8 U	μg/l
A1	WS-04A	WS04AGW01S006	7/14/2016	N	HC	SW8015B	TPH C-7	8 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.057 =	mg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	GENCHEM	E300	Fluoride	0.14 =	mg,
A1 A1	WS-04A WS-04A	WS04AGW01S006 WS04AGW01S006	7/14/2016 7/14/2016	N N	GENCHEM ENRG PROP	E300 SW8330A	Nitrogen, Nitrate (as N) 1,3-Dinitrobenzene	0.053 U 0.053 U	mg, μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	ENRG PROP	SW8330A	Nitrobenzene	0.059 U	μg/
A1	WS-04A	WS04AGW01S006	7/14/2016	N	ENRG PROP	E314	Perchlorate	0.41 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	µв/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.59 J	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD FD	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/
A1 A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016 7/14/2016	FD	VOC	SW8260B SW8260B	2-Hexanone 4-Chlorotoluene	2.1 U 0.13 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/ μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Acetone	6 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Benzene	0.14 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Bromobenzene	0.3 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Bromochloromethane	0.48 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Bromoform	0.5 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Bromomethane	3.9 UJ	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Chlorobenzene	0.17 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Chloroethane	2.3 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Chloromethane	1.8 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Dibromomethane	0.46 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Ethylbenzene	0.14 U	μg/
A1	WS-04A WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8315A	Formaldehyde Heyerblerehytediene	100 =	μg/
A1 A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016 7/14/2016	FD FD	VOC VOC	SW8260B SW8260B	Hexachlorobutadiene	0.32 U 37 U	μg/
A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016	FD	VOC	SW8260B SW8260B	Isopropanol Isopropylbenzene	0.58 U	μg/ μg/
A1	WS-04A WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B SW8260B	m,p-Xylenes	0.58 U	μg/ μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Methylene chloride	0.64 U	μg/ μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	n-butylbenzene	0.23 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	o-Xylene	0.23 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Pentachloroethane	1.5 U	μg/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	p-Isopropyltoluene	0.16 U	дв/ µв/
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/
ΑI		WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Styrene	0.17 U	μg/
A1	WS-04A	W304AGWUID000	1/14/2010						
	WS-04A WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

		a Area II Grounawater	Sample		-	, ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
A1	WS-04A	WS04AGW01D006	7/14/2016		VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
A1 A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016 7/14/2016	FD FD	VOC	SW8260B SW8260B	trans-1,3-Dichloropropene Trichloroethene	0.25 U 0.37 U	μg/L μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 UJ	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	PHTH		Bis(2-ethylhexyl)phthalate	0.11 J	μg/L
A1 A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016 7/14/2016	FD FD	PHTH PHTH	SW8270C-SIM SW8270C-SIM	Butyl benzyl phthalate Diethyl phthalate	0.077 J 0.051 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	PHTH		Dimethyl phthalate	0.044 U	μg/L μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	PHTH		Di-n-butyl phthalate	0.077 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	PHTH		Di-n-octyl phthalate	0.046 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	НС	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/L
A1 A1	WS-04A WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016 7/14/2016	FD FD	HC HC	SW8015B SW8015B	ORO (C31-C40) TPH C-7	8 U	μg/L μg/L
A1	WS-04A	WS04AGW01D006 WS04AGW01D006	7/14/2016	FD	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.046 J	μg/L mg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	GENCHEM	E300	Fluoride	0.13 =	mg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.057 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	ENRG_PROP	SW8330A	Nitrobenzene	0.063 U	μg/L
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.2 U	μg/L
BRV BRV	HAR-19 HAR-19	HAR19GW01S016 HAR19GW01S016	7/26/2016 7/26/2016	N N	VOC	SW8260B SW8260B	1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane	0.2 U 0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.2 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.3 U	μg/L
BRV BRV	HAR-19 HAR-19	HAR19GW01S016 HAR19GW01S016	7/26/2016 7/26/2016	N N	VOC	SW8260B E504.1	1,2,4-Trimethylbenzene	0.2 U 0.0023 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	E504.1	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane (EDB)	0.0023 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	Ν	VOC	SW8260B	1,2-Dichloropropane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.2 U	μg/L
BRV BRV	HAR-19 HAR-19	HAR19GW01S016	7/26/2016 7/26/2016	N N	VOC	SW8260B SW8260B-SIM	1,4-Dicklorobenzene	0.2 U 1.8 U	μg/L
BRV		HAR19GW01S016 HAR19GW01S016	7/26/2016	N	VOC	SW8260B-SIIVI	1,4-Dioxane (P-Dioxane) 2,2-Dichloropropane	0.2 U	μg/L μg/L
BRV		HAR19GW01S016	7/26/2016		VOC		2-Butanone (MEK)	5 U	μg/L μg/L
BRV		HAR19GW01S016	7/26/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	2-Chloro-1,3-butadiene	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	2-Chlorotoluene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	2-Hexanone	5 U	μg/L
BRV	HAR-19	HAR19GW01S016 HAR19GW01S016	7/26/2016	N	VOC	SW8260B	4-Chlorotoluene	0.2 U	μg/L
BRV BRV	HAR-19 HAR-19	HAR19GW01S016 HAR19GW01S016	7/26/2016 7/26/2016	N N	VOC	SW8260B SW8260B	4-Methyl-2-pentanone (MIBK) Acetone	2.1 U 5 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Acetonitrile	10 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Acrolein	5 UJ	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Acrylonitrile	5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Allyl Chloride (3-Chloropropene)	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Benzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Bromobenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Bromochloromethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Bromodichloromethane Bromoform	0.2 U	μg/L
BRV BRV	HAR-19 HAR-19	HAR19GW01S016 HAR19GW01S016	7/26/2016 7/26/2016	N N	VOC	SW8260B SW8260B	Bromoform Bromomethane	0.3 U 0.3 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Carbon Disulfide	0.3 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Carbon tetrachloride	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Chlorobenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Chloroethane	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Chloromethane	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	2.3 =	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Type	Class	Method	Analyte	Final Result	Units
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	49 =	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Dibromochloromethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Dibromomethane	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.6 J	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Ethyl Methacrylate	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Ethylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8315A	Formaldehyde	20 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	Ν	VOC	SW8260B	Iodomethane (Methyl Iodide)	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	Z	VOC	SW8260B	Isobutanol	20 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Isopropanol	61 J	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	Ν	VOC	SW8260B	Isopropylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	Ν	VOC	SW8260B	m,p-Xylenes	0.4 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Methyl Methacrylate	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Methylacrylonitrile	5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Methylene chloride	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	n-butylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	n-Propylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	o-Xylene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Pentachloroethane	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	p-IsopropyItoluene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Propane Nitrile (Propionitrile)	10 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	sec-Butylbenzene	0.2 U	μg/L μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Styrene	0.2 U	μg/L μg/L
BRV	HAR-19	HAR19GW015016	7/26/2016	N	VOC	SW8260B	tert-Butylbenzene	0.2 U	μg/L
BRV	HAR-19	HAR19GW015016	7/26/2016	N	VOC	SW8260B	Tetrachloroethene	0.2 U	μg/L
BRV	HAR-19			N	VOC	SW8260B	Toluene	0.2 U	
		HAR19GW01S016 HAR19GW01S016	7/26/2016		VOC				μg/L
BRV	HAR-19		7/26/2016	N		SW8260B	trans-1,2-Dichloroethene	31 =	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	trans-1,4-Dichloro-2-butene	1 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Trichloroethene	49 =	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Trichlorofluoromethane	0.3 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.2 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Vinyl Acetate	0.5 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	VOC	SW8260B	Vinyl chloride	2.5 =	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	SVOC	SW8270C	n-Nitrosodimethylamine	12 UJ	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.091 J	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Bis(2-ethylhexyl)phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Butyl benzyl phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.11 J	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Diethyl phthalate	0.052 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Diethyl phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Dimethyl phthalate	0.045 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Dimethyl phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Di-n-butyl phthalate	0.12 J	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Di-n-butyl phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C-SIM	Di-n-octyl phthalate	0.047 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	PHTH	SW8270C	Di-n-octyl phthalate	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	НС	SW8015B	Diesel Range Organics (C12-C14)	520 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	520 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	НС	SW8015B	Diesel Range Organics (C21-C30)	520 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	520 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	520 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	HC	SW8015B	GRO (C4-C12)	50 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.06 U	mg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	GENCHEM	E300	Fluoride	0.425 J	mg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	GENCHEM	E300	Nitrite-N	0.423 J	mg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N		E300	Nitrogen, Nitrate (as N)	0.03 U	
BRV	HAR-19	HAR19GW01S016		N	GENCHEM GENCHEM	SW9040	pH	7.41 =	mg/L
		HAR19GW01S016	7/26/2016			SW9040 SW8270C			pH units
BRV	HAR-19		7/26/2016	N	ENRG_PROP		1,3-Dinitrobenzene	12 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.055 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	ENRG_PROP	SW8270C	Nitrobenzene	12 UJ	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.061 U	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	Ν	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
	HAR-21	HAR21GW01S006	7/18/2016	Z	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
BRV	IIAN-ZI								
BRV BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
		HAR21GW01S006 HAR21GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B SW8260B	1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U 0.45 U	μg/L μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area | LOX and Area || Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample			016, SSFL, Venti			
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
BRV		HAR21GW01S006 HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
BRV BRV	HAR-21 HAR-21	HAR21GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B E504.1	1,2,4-Trimethylbenzene	0.36 U 0.0023 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane 1,2-Dibromo-3-chloropropane	1.2 U	μg/L μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	E504.1	1,2-Dibromoethane (EDB)	0.002 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	1.2 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U 6 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N N	VOC	SW8260B SW8260B	Acetone Benzene	0.14 U	μg/L
BRV		HAR21GW01S006 HAR21GW01S006	7/18/2016 7/18/2016	N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Bromodichloromethane	0.48 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	Ν	VOC	SW8260B	cis-1,2-Dichloroethene	150 J	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8315A	Formaldehyde	61 =	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
BRV		HAR21GW01S006 HAR21GW01S006	7/18/2016 7/18/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U 0.64 U	μg/L
BRV		HAR21GW015006	7/18/2016	N N	VOC	SW8260B SW8260B	Methylene chloride Methyl-tert-butyl Ether (MTBE)	0.64 U 0.31 U	μg/L μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	n-butylbenzene	0.31 U	μg/L μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	n-Propylbenzene	0.23 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	12 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
BRV		HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Trichloroethene	0.46 J	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	VOC	SW8260B	Vinyl chloride	48 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.017 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.12 J	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.061 J	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	PHTH	SW8270C-SIM	Diethyl phthalate	0.05 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater		Report	, Third Quarter 2	016, SSFL, Venti	ura County, California		
			Sample	_	-				
Site	Location	Sample ID HAR21GW01S006	Date	Туре	Class	Method	Analyte	Final Result	Units
BRV BRV	HAR-21 HAR-21	HAR21GW01S006	7/18/2016 7/18/2016	N N	PHTH PHTH		Di-n-butyl phthalate Di-n-octyl phthalate	0.076 U 0.045 U	μg/L μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	50 U	μg/L μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	50 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	50 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	50 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	50 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	НС	SW8015B	GRO (C4-C12)	53 =	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	ORO (C31-C40)	50 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	HC	SW8015B	TPH C-7	50 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.059 =	mg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	GENCHEM	E300	Fluoride	0.33 =	mg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.062 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.069 U	μg/L
BRV	HAR-21	HAR21GW01S006	7/18/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
CA	RD-40	RD40GW01S007	7/13/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
CA CA	RD-41A RD-41A	RD41AGW01S006 RD41AGW01S006	7/25/2016 7/25/2016	N N	VOC	SW8260B SW8260B	1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U 0.45 U	μg/L ug/l
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B SW8260B	1,1,2-Trichloroethane	0.45 U	μg/L μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.38 U	μg/L μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.28 U	μg/L μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
CA CA	RD-41A RD-41A	RD41AGW01S006 RD41AGW01S006	7/25/2016 7/25/2016	N N	VOC	SW8260B SW8260B	2-Butanone (MEK)	2.2 U 2.1 U	μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B SW8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene	0.24 U	μg/L μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
CA		RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Dibromochloromethane Dibromomethane	0.25 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Dibromomethane Dichlorodifluoromethane	0.46 U	μg/L
CA CA	RD-41A RD-41A	RD41AGW01S006 RD41AGW01S006	7/25/2016 7/25/2016	N N	VOC	SW8260B SW8260B	Dichlorodifluoromethane Ethylbenzene	0.46 U 0.14 U	μg/L
CA	RD-41A RD-41A	RD41AGW01S006 RD41AGW01S006	7/25/2016	N	VOC	SW8260B SW8260B	Hexachlorobutadiene	0.14 U 0.32 U	μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N N	VOC	SW8260B SW8260B	Isopropanol	0.32 U 37 U	μg/L μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L μg/L
CA	RD-41A RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	t, Third Quarter 2	016, SSFL, Venti	ura County, California		
Site	Location	Sample ID	Sample Date	Tuno	Class	Method	Analyte	Final Result	Units
CA		RD41AGW01S006	7/25/2016	Type N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
CA		RD41AGW01S006	7/25/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
CA		RD41AGW01S006	7/25/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
CA CA	RD-41A RD-41A	RD41AGW01S006 RD41AGW01S006	7/25/2016 7/25/2016	N N	VOC	SW8260B SW8260B	Trichloroethene Trichlorofluoromethane	1.2 J 1.7 U	μg/L μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Calcium, dissolved	147 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Iron, dissolved	0.0704 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Magnesium, dissolved	25 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Manganese, dissolved	0.00576 =	mg/L
CA		RD41AGW01S006	7/25/2016	N	INO	SW6020	Potassium, dissolved	4.01 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Sodium, dissolved	69.2 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Strontium, dissolved	0.595 =	mg/L
CA	RD-41A	RD41AGW01S006	7/25/2016	N	INO	SW6020	Zinc, dissolved	0.76 =	mg/L
CA	RD-41B RD-41B	RD41BGW01S008	7/22/2016 7/22/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	0.4 U 0.3 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016	N N	VOC	SW8260B SW8260B	1,1,2,2-Tetrachloroethane	0.3 U 0.41 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1-Dichloroethene	3.8 J	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016 7/22/2016	N N	VOC	SW8260B SW8260B	1,2-Dibromo-3-chloropropane 1,2-Dibromoethane (EDB)	1.2 U 0.36 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2-Dibromoetriane (EDB)	0.36 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.44 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC		1,4-Dioxane (P-Dioxane)	1.8 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016 7/22/2016	N N	VOC	SW8260B SW8260B	2-Butanone (MEK)	2.2 U 2.1 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene	0.24 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Benzene	0.18 J	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016 7/22/2016	N N	VOC	SW8260B SW8260B	Bromomethane Carbon tetrachloride	3.9 UJ 0.23 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B SW8260B	Chlorobenzene	0.23 U 0.17 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	1300 =	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Ethylbenzene Havachlorohutadiana	0.14 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016 7/22/2016	N N	VOC	SW8260B SW8260B	Hexachlorobutadiene Isopropanol	0.32 U 37 U	μg/L μg/L
CA	RD-41B RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B SW8260B	Isopropylbenzene	0.58 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L μg/L
CA		RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Type	Class	Method	Analyte	Final Result	Units
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U 0.25 U	μg/L
CA CA	RD-41B RD-41B	RD41BGW01S008 RD41BGW01S008	7/22/2016 7/22/2016	N N	VOC	SW8260B SW8260B	sec-Butylbenzene Styrene	0.23 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	tert-Butylbenzene	0.17 U	μg/L μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Toluene	0.33 J	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	58 =	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Trichloroethene	8.1 =	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	VOC	SW8260B	Vinyl chloride	23 =	μg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Calcium, dissolved	91.7 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Iron, dissolved	1.73 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Magnesium, dissolved	19.2 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Manganese, dissolved	0.0417 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Potassium, dissolved	3.32 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Sodium, dissolved	52.5 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Strontium, dissolved	1.01 =	mg/L
CA	RD-41B	RD41BGW01S008	7/22/2016	N	INO	SW6020	Zinc, dissolved	0.174 =	mg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	3 U	μg/L
DTA DTA	HAR-07	HAR07GWS008 HAR07GWS008	7/12/2016	N N	VOC	SW8260B SW8260B	1,1,2,2-Tetrachloroethane	4.1 U 4.5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016 7/12/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane	3.8 U	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1-Dichloroethane	2.8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1-Dichloroethane	9.7 J	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,1-Dichloropropene	4.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	5.1 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	6.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	3.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	12 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	3.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	4.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2-Dichloroethane	2.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,2-Dichloropropane	4.2 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	2.8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,3-Dichloropropane	3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	4.3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC		1,4-Dioxane (P-Dioxane)	18 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	2,2-Dichloropropane	3.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	2-Butanone (MEK)	22 U	μg/L
DTA	HAR-07	HAR07GWS008 HAR07GWS008	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene	21 U 2.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N N	VOC	SW8260B SW8260B	2-Hexanone	2.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N N	VOC	SW8260B SW8260B	4-Chlorotoluene	1.3 U	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	44 U	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Acetone	60 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Benzene	1.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Bromobenzene	3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Bromochloromethane	4.8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Bromodichloromethane	2.1 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Bromoform	5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Bromomethane	39 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Carbon tetrachloride	2.3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Chlorobenzene	1.7 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Chloroethane	23 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Chloromethane	18 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	18 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	2900 =	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	2.5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Dibromochloromethane	2.5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Dibromomethane	4.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Dichlorodifluoromethane	4.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Ethylbenzene	1.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8315A	Formaldehyde	34 J	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitorina Report. Third Quarter 2016. SSFL. Ventura County. California

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Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Hexachlorobutadiene	3.2 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Isopropanol	370 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Isopropylbenzene	5.8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	m,p-Xylenes	3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Methylene chloride	6.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	3.1 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	n-butylbenzene	2.3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	n-Propylbenzene	1.7 U 2.3 U	μg/L
DTA DTA	HAR-07 HAR-07	HAR07GWS008 HAR07GWS008	7/12/2016 7/12/2016	N N	VOC	SW8260B SW8260B	o-Xylene Pentachloroethane	2.3 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	p-Isopropyltoluene	1.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	sec-Butylbenzene	2.5 U	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Styrene	1.7 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	tert-Butylbenzene	2.8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Tetrachloroethene	3.9 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Toluene	2.4 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	270 =	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	2.5 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Trichloroethene	490 =	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Trichlorofluoromethane	17 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	4.6 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	VOC	SW8260B	Vinyl chloride	130 =	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.019 =	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 UJ	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
DTA DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC HC	SW8015B	Diesel Range Organics (C8-C11)	17 J 17 J	μg/L
DTA	HAR-07 HAR-07	HAR07GWS008 HAR07GWS008	7/12/2016 7/12/2016	N N	HC HC	SW8015B SW8015B	Diesel Range Organics (C8-C30) GRO (C4-C12)	200 =	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC	SW8015B	ORO (C31-C40)	8 U	μg/L μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	HC	SW8015B	TPH C-7	8 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.083 =	mg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	GENCHEM	E300	Fluoride	0.31 =	mg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	GENCHEM	SW9040C	pH	6.92 =	pH units
DTA	HAR-07	HAR07GWS008	7/12/2016	N	ENRG PROP	SW8330A	1,3-Dinitrobenzene	0.051 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.056 U	μg/L
DTA	HAR-07	HAR07GWS008	7/12/2016	Ν	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
NBZ		SP33CGW01S005	7/13/2016	N	VOC		1,2,3-Trichlorobenzene	0.51 U	μg/L
NBZ NBZ		SP33CGW01S005	7/13/2016		VOC		1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.64 U 0.5 U	μg/L
NBZ NBZ	SP-33C SP-33C	SP33CGW01S005 SP33CGW01S005	7/13/2016 7/13/2016	N N	VOC	SW8260B SW8260B	1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene	0.36 U	μg/L μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
NBZ		SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
_	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
NBZ		SP33CGW01S005	7/13/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
NBZ	SP-33C			N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
NBZ NBZ	SP-33C	SP33CGW01S005	7/13/2016			C14:00 C			
NBZ NBZ NBZ	SP-33C SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
NBZ NBZ NBZ NBZ	SP-33C SP-33C SP-33C	SP33CGW01S005 SP33CGW01S005	7/13/2016 7/13/2016	N N	VOC	SW8260B	Acetone	6 U	μg/L
NBZ NBZ NBZ NBZ NBZ	SP-33C SP-33C SP-33C SP-33C	SP33CGW01S005 SP33CGW01S005 SP33CGW01S005	7/13/2016 7/13/2016 7/13/2016	N N N	VOC VOC	SW8260B SW8260B	Acetone Benzene	6 U 0.14 U	μg/L μg/L
NBZ NBZ NBZ NBZ	SP-33C SP-33C SP-33C	SP33CGW01S005 SP33CGW01S005	7/13/2016 7/13/2016	N N	VOC	SW8260B	Acetone	6 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater		Report	, Third Quarter 2	016, SSFL, Venti	ura County, California	1	
C:t-	Landing	Commis ID	Sample	T	Class	Bankha d	Amalia	Final Bassile	Haita
Site NBZ	SP-33C	Sample ID SP33CGW01S005	7/13/2016	Type N	Class VOC	Method SW8260B	Analyte Bromoform	Final Result 0.5 U	Units μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Bromomethane	3.9 U	μg/L μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	Ν	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	Ν	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U 0.23 U	μg/L
NBZ NBZ	SP-33C SP-33C	SP33CGW01S005 SP33CGW01S005	7/13/2016 7/13/2016	N N	VOC	SW8260B SW8260B	o-Xylene Pentachloroethane	0.23 U 1.5 UJ	μg/L
NBZ	SP-33C SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B SW8260B	p-Isopropyltoluene	0.16 U	μg/L μg/L
NBZ	SP-33C SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B SW8260B	sec-Butylbenzene	0.16 U	μg/L μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Styrene	0.23 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	Ν	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
NBZ	SP-33C	SP33CGW01S005	7/13/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016 8/12/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
OS OS	RD-68A RD-68A	RD68AGW01S006 RD68AGW01S006	8/12/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.46 U 0.51 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.51 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
OS		RD68AGW01S006	8/12/2016	N	VOC		1,2-Dibromoethane (EDB)	0.36 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Bromobenzene Bromoshloromothono	0.3 U	μg/L
OS OS	RD-68A RD-68A	RD68AGW01S006 RD68AGW01S006	8/12/2016	N	VOC	SW8260B SW8260B	Bromochloromethane Bromodichloromethane	0.48 U 0.21 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016 8/12/2016	N N	VOC	SW8260B SW8260B	Bromodicnioromethane Bromoform	0.21 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B SW8260B	Bromomethane	3.9 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Chlorobenzene	0.23 U	μg/L
			0, 12, 2010		100	3.102000	Journal	0.17 0	M9/ 5

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
OS OS	RD-68A RD-68A	RD68AGW01S006	8/12/2016 8/12/2016	N N	VOC	SW8315A SW8260B	Formaldehyde Hexachlorobutadiene	20 U 0.32 U	μg/L
OS	RD-68A	RD68AGW01S006 RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Isopropanol	230 =	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	Ν	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
OS OS	RD-68A RD-68A	RD68AGW01S006	8/12/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U 0.3 U	μg/L
OS	RD-68A	RD68AGW01S006 RD68AGW01S006	8/12/2016 8/12/2016	N N	SVOC	SW8260B E1625C	Vinyl chloride n-Nitrosodimethylamine	0.3 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.003 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH	SW8270C-SIM	Bis(2-ethylhexyl)phthalate	0.23 U	μg/L μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.063 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH		Diethyl phthalate	0.052 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH		Dimethyl phthalate	0.045 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH		Di-n-butyl phthalate	0.24 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	PHTH	SW8270C-SIM	Di-n-octyl phthalate	0.047 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	НС	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	ORO (C31-C40)	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	HC	SW8015B	TPH C-7	8 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.088 =	mg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	GENCHEM	E300	Fluoride	0.7 =	mg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.049 U	μg/L
OS	RD-68A	RD68AGW01S006	8/12/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.054 U	μg/L
OS OS	RD-68A RD-68B	RD68AGW01S006 RD68BGW01S006	8/12/2016	N	ENRG_PROP VOC	E314 SW8260B	Perchlorate	0.41 U 0.4 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016 8/12/2016	N N	VOC	SW8260B SW8260B	1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	0.4 U 0.3 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B SW8260B	1,1,2,2-Tetrachloroethane	0.3 U 0.41 U	μg/L μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U	μg/L μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.43 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016		VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
OS	RD-68B	RD68BGW01S006	8/12/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Site Location Sample ID Date Type Class OS RD-68B RD68BBW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	Method	Analyte 1,4-Dichlorobenzene 1,4-Dichlorobenzene 2,2-Dichloropropane 2-Butanone (MEK) 2-Chloro-1,1,1-trifluoroethane 2-Hexanone 4-Chlorotoluene 2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromodichloromethane Bromodichloromethane Carbon tetrachloride Chloroethane Chloroethane Chloromethane Chloromethane Chloromethane Ethylbenzene Dibromochloromethane Dichlorodifluoromethane Dichlorodifluoromethane Dispromomethane Dispropanol Isopropylbenzene m,p-Xylenes Methyl-tert-butyl Ether (MTBE) n-bryylbenzene n-Propylbenzene	Final Result 0.43 U 0.35 U 0.35 U 0.36 U 2.2 U 2.1 U 0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.5 U 3.9 U 0.23 U 1.8 U 1.8 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.31 U 0.58 U	Units
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B-SIM SW8260B	1,4-Dioxane (P-Dioxane) 2,2-Dichloropropane 2-Butanone (MEK) 2-Chloro-1,1,1-trifluoroethane 2-Hexanone 4-Chlorotoluene 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromochloromethane Bromodichloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloropropene Dibromochloromethane Diblorodifluoromethane Ethylbenzene Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.35 U 0.36 U 2.2 U 2.1 U 0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.31 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 0.25 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.31 U	нg/L нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	2,2-Dichloropropane 2-Butanone (MEK) 2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene 2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.36 U 2.2 U 2.1 U 0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.17 U 2.3 U 1.8 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.31 U 0.31 U	нду/L
OS RD-68B RD688GW015006 8/12/2016 N VOC OS RD-68B RD688GW015006 8/12/2016	\$W8260B \$W8260B	2-Butanone (MEK) 2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene 2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chloroethane Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloromethane Dibromomethane Dibromomethane Dibromomethane Dibromothloromethane Diblorodifluoromethane Dibromothloromethane Dishorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	2.2 U 2.1 U 0.24 U 2.1 U 0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.33 U 0.31 U 0.31 U 0.64 U 0.31 U	нg/L нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene 2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromothane Carbon tetrachloride Chloroethane Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dichlorodifluoromethane Siblorodifluoromethane Dispormochloromethane Dispormochloromethane Dispormochloromethane Dispormochloromethane Dispormochloromethane Dispormochloromethane Disporpopanol Isopropanol Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	2.1 U 0.24 U 2.1 U 0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.17 U 2.3 U 1.8 U 1.8 U 0.46 U 0.46 U 0.46 U 0.14 U 0.32 U 410 = 0.58 U 0.33 U	нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	2-Chlorotoluene 2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chloroethane Chlorotrifluoroethylene cis-1,2-Dichlorogethene cis-1,3-Dichloropropene Dibromomethane Dibromomethane Dichlorodifluoromethane Sibromomethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Dispomochloromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.24 U 2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.17 U 2.3 U 1.8 U 1.8 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.33 U 0.58 U 0.31 U 0.58 U 0.31 U 0.64 U 0.64 U 0.76 U 0.77 U 0.78 U 0.78 U 0.80 U 0.80 U 0.90 U 0	нду/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	2-Hexanone 4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chlorotethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	2.1 U 0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.17 U 2.3 U 1.8 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.33 U 0.31 U 0.46 U 0.31 U	нg/L нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	4-Chlorotoluene 4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromodichloromethane Carbon tetrachloride Chloroethane Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloropropene Dibromochloromethane Diblorodifluoromethane Ethylbenzene Ethylbenzene Emylbenzene Emylbenzene Emylbenzene Emylbenzene Emylbenzene Emylbenzene Emylbenzene Formaldehyde Hexachlorobutadiene Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.13 U 4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.31 U 0.64 U 0.31 U 0.31 U	нg/L нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	4-Methyl-2-pentanone (MIBK) Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromodichloromethane Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Diblorodifluoromethane Diblorodifluoromethane Isopropanol Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	4.4 U 13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 0.25 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.58 U 0.64 U 0.14 U 0.14 U 0.14 U 0.18 U 0.19 U	нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chlorotenane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Diblorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	13 J 0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.17 U 2.3 U 1.8 U 1.8 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.58 U 0.64 U 0.64 U 0.14 U 0.75 U	нg/L нд/L
OS RD-688 RD688GW015006 8/12/2016 N VOC OS RD-688 RD688GW015006 8/12/2016 N VOC OS RD-688 RD688GW015006 8/12/2016 N VOC OS RD-688 RD68BGW015006 8/12/2016	\$W8260B \$W8260B	Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.14 U 0.3 U 0.48 U 0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.3 U 0.3 U 0.3 U 0.3 U 0.46 U 0.31 U 0.25 U	нg/L нд/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	Bromochloromethane Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.48 U 0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.14 U 0.14 U 20 U 0.32 U	нg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B	Bromodichloromethane Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane Chloromethane Cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.21 U 0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.34 U 0.31 U 0.31 U 0.32 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Bromoform Bromomethane Carbon tetrachloride Chlorobenzene Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Diblenzene Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.5 U 3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.14 U 0.31 U 0.64 U 0.31 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Bromomethane Carbon tetrachloride Chlorobenzene Chloromethane Chloromethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibhorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	3.9 U 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.58 U 0.64 U 0.14 U 0.15 U 0.15 U 0.16 U 0.16 U 0.17 U 0.18 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Carbon tetrachloride Chlorobenzene Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Chlorobenzene Chloroethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.34 U 0.58 U 0.58 U 0.31 U 0.31 U 0.32 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Chloroethane Chloromethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.34 U 0.34 U 0.31 U 0.32 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Chloromethane Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.34 U 0.31 U 0.31 U 0.32 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Chlorotrifluoroethylene cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	1.8 U 0.48 U 0.25 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	cis-1,2-Dichloroethene cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.48 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8315A \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	cis-1,3-Dichloropropene Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8260B \$W8315A \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Dibromochloromethane Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8260B \$W8315A \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Dibromomethane Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.46 U 0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8260B \$W8315A \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Dichlorodifluoromethane Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.46 U 0.14 U 20 U 0.32 U 410 = 0.58 U 0.31 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	\$W8260B \$W8315A \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B \$W8260B	Ethylbenzene Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.14 U 20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8315A SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	Formaldehyde Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	20 U 0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L μg/L μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	Hexachlorobutadiene Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.32 U 410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	µg/L µg/L µg/L µg/L µg/L µg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B SW8260B SW8260B SW8260B	Isopropanol Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	410 = 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B SW8260B SW8260B	Isopropylbenzene m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.58 U 0.3 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B SW8260B	m,p-Xylenes Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.3 U 0.64 U 0.31 U 0.23 U	μg/L μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B SW8260B	Methylene chloride Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.64 U 0.31 U 0.23 U	μg/L μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B SW8260B	Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.31 U 0.23 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016		*		
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B	n-Pronylhenzene		μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016			0.17 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B	o-Xylene	0.23 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016	SW8260B	Pentachloroethane	1.5 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 <td>SW8260B</td> <td>sec-Butylbenzene</td> <td>0.25 U</td> <td>μg/L</td>	SW8260B	sec-Butylbenzene	0.25 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 <td>SW8260B</td> <td>Styrene</td> <td>0.17 U</td> <td>μg/L</td>	SW8260B	Styrene	0.17 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	tert-Butylbenzene	0.28 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	Tetrachloroethene	0.39 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	Toluene	0.24 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B	Trichloroethene Trichlorofluoromethane	0.37 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N VOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B		1.7 U 0.46 U	μg/L
OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N SVOC OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH OS RD-68B RD68BGW015006 8/12/2016 N PHTH	SW8260B SW8260B	Trichloromethane (Chloroform) Vinyl chloride	0.46 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N SVOC OS RD-68B RD68BGW01S006 8/12/2016 N PHTH OS RD-68B RD68BGW01S006 8/12/2016 N PHTH OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N PHTH OS RD-68B RD68BGW01S006 8/12/2016 N PHTH OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	SW8315A	Unsymetrical Dimethyl Hydrazine	0.0029 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N PHTH OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	SW8270C-SIM		0.055 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	SW8270C-SIM	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	0.052 U	μg/L
	SW8270C-SIM		0.052 U	μg/L
	SW8270C-SIM		0.39 J	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	SW8270C-SIM	, .	0.085 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N PHTH	SW8270C-SIM	* *	0.047 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	ORO (C31-C40)	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N HC	SW8015B	TPH C-7	8 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.09 =	mg/L
OS RD-68B RD68BGW01S006 8/12/2016 N GENCHEM	E300	Fluoride	0.97 =	mg/L
OS RD-68B RD68BGW01S006 8/12/2016 N GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
OS RD-68B RD68BGW01S006 8/12/2016 N ENRG_PROI	C14/00000		0.056 U	μg/L
OS RD-68B RD68BGW01S006 8/12/2016 N ENRG_PROI		1,3-Dinitrobenzene	0.062 U	μg/L
OS	SW8330A	Nitrobenzene	0.4111	μg/L
OS SP-29B SP29BGW01S003 8/12/2016 N VOC	SW8330A E314	Nitrobenzene Perchlorate	0.41 U	
OS SP-29B SP29BGW01S003 8/12/2016 N VOC	SW8330A	Nitrobenzene	0.41 U 0.4 U 0.3 U	μg/L μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	, Third Quarter 2	016, SSFL, Venti	ura County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016 8/12/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloroethane 1,1-Dichloroethene	0.28 U 0.43 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.45 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B-SIM	1,2,3-Trichloropropane	0.0025 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016 8/12/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016	N N	VOC	SW8260B SW8260B	1,2-Dichlorobenzene 1,2-Dichloroethane	0.46 U 0.24 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.42 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016	N N	VOC	SW8260B SW8260B	2-Hexanone 4-Chlorotoluene	2.1 U 0.13 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016 8/12/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Acetone (WIBK)	6 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Bromomethane	3.9 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
OS OS	SP-29B	SP29BGW01S003	8/12/2016	N N	VOC	SW8260B	Chlorophana	0.17 U	μg/L
OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016 8/12/2016	N	VOC	SW8260B SW8260B	Chloromethane Chloromethane	2.3 U 1.8 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	Ν	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016 8/12/2016	N N	VOC	SW8260B SW8260B	Isopropanol Isopropylbenzene	37 U 0.58 U	μg/L μg/L
OS	SP-29B SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B SW8260B	m,p-Xylenes	0.58 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016	N	VOC	SW8260B SW8260B	sec-Butylbenzene Styrene	0.25 U 0.17 U	μg/L
OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016 8/12/2016	N N	VOC	SW8260B SW8260B	tert-Butylbenzene	0.17 U 0.28 U	μg/L μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016 8/12/2016	N	RAD RAD	E901.1 E901.1	Actinium-228 Actinium-228, dissolved	23 U 21.3 U	pCi/L
OS	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016	N N	RAD	E901.1	Alpha, Gross	5.9 =	pCi/L pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Americium-241	-10.6 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Americium-241, dissolved	-3.29 U	pCi/L
					i e		i e e e e e e e e e e e e e e e e e e e		

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitorina Report. Third Quarter 2016. SSFL. Ventura County. California

OS OS OS OS OS	SP-29B SP-29B	SP29BGW01S003				Method	Analyte	Final Result	Units
OS OS OS	SP-29B		8/12/2016	N	RAD	E901.1	Antimony-125	15.5 U	pCi/L
OS OS		SP29BGW01S003	8/12/2016	N	RAD	E901.1	Antimony-125, dissolved	20.1 U	pCi/L
OS OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Barium-133	-9.23 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016 8/12/2016	N	RAD	E901.1	Barium-133, dissolved	-8.7 U	pCi/L
	SP-29B SP-29B	SP29BGW01S003 SP29BGW01S003	8/12/2016	N N	RAD RAD	E900 E901.1	Beta, Gross Bismuth-212	5.79 = 75.6 U	pCi/L pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Bismuth-212, dissolved	47.2 U	pCi/L
OS	SP-29B	SP29BGW013003	8/12/2016	N	RAD	E901.1	Bismuth-214	523 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Bismuth-214, dissolved	418 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cesium-134	9.02 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cesium-134, dissolved	-7.18 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cesium-137	-8.65 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cesium-137, dissolved	1.38 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cobalt-57	-45 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cobalt-57, dissolved	3.04 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cobalt-60	4.41 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Cobalt-60, dissolved	7.21 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-152	12.1 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-152, dissolved	-4.79 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-154	29.7 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-154, dissolved	55.3 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-155	-21.9 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Europium-155, dissolved	-14.4 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E900	Gross Alpha, decanted	5.15 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E900	Gross Beta, decanted	7.91 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-210	233 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-210, dissolved	122 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-212	-3.99 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-212, dissolved	2.65 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-214	558 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Lead-214, dissolved	457 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Manganese-54	-0.0242 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Manganese-54, dissolved	-6.54 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Potassium-40	8.78 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Potassium-40, dissolved	-2.4 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Sodium-22	-12.3 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Sodium-22, dissolved	-2.66 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E905.0	Strontium 89/90	0.287 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Thallium-208	-0.0769 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Thallium-208, dissolved	-0.317 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Thorium-234	-56.8 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E901.1	Thorium-234, dissolved	-42.1 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	E906.0	Tritium	-40.5 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	Radioisotopes	Uranium-233/-234	1.22 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	Radioisotopes	Uranium-235/236	-0.00906 U	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	RAD	Radioisotopes	Uranium-238	0.559 =	pCi/L
OS	SP-29B	SP29BGW01S003	8/12/2016	N	GENCHEM	E300	Fluoride	4.8 =	mg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
OS		SP29BGW01D003	8/12/2016	FD	VOC		1,1,1-Trichloroethane	0.3 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B-SIM	1,2,3-Trichloropropane	0.0025 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	t, Third Quarter 2	016, SSFL, Vent	ura County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Acetone	6 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016	FD FD	VOC	SW8260B SW8260B	Bromehonzone	0.14 U 0.3 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016 8/12/2016	FD	VOC	SW8260B	Bromobenzene Bromochloromethane	0.3 U	μg/L μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Bromodichloromethane	0.48 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Bromoform	0.5 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Bromomethane	3.9 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Chloroethane	2.3 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Chloromethane	1.8 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016 8/12/2016	FD FD	VOC	SW8260B SW8260B	cis-1,2-Dichloroethene cis-1,3-Dichloropropene	0.48 U 0.25 U	μg/L μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Isopropanol	69 J	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016 8/12/2016	FD FD	VOC	SW8260B SW8260B	n-Propylbenzene o-Xylene	0.17 U 0.23 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Styrene	0.17 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Toluene	0.24 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016	FD	VOC	SW8260B SW8260B	Trichlorofluoromethane	1.7 U 0.46 U	μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016 8/12/2016	FD FD	VOC	SW8260B	Trichloromethane (Chloroform) Vinyl chloride	0.46 U	μg/L μg/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Actinium-228	8.47 U	ρCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Actinium-228, dissolved	11.8 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E900	Alpha, Gross	5.23 U	pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Americium-241	-2.12 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Americium-241, dissolved	7.77 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Antimony-125	-4.3 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Antimony-125, dissolved	12.9 U	pCi/L
OS		SP29BGW01D003	8/12/2016		RAD	E901.1	Barium-133	-7 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016 8/12/2016	FD	RAD	E901.1	Barium-133, dissolved	-0.17 U	pCi/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016	FD FD	RAD RAD	E900 E901.1	Beta, Gross Bismuth-212	7.19 = 22.5 U	pCi/L pCi/L
OS	SP-29B SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Bismuth-212, dissolved	193 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Bismuth-214	466 =	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Bismuth-214, dissolved	393 =	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cesium-134	8.71 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cesium-134, dissolved	2.23 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cesium-137	-5.24 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cesium-137, dissolved	-2.31 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cobalt-57	-4.25 U	pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cobalt-57, dissolved	-4.63 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Cobalt-60	0.244 U	pCi/L
OS OS	SP-29B	SP29BGW01D003	8/12/2016 8/12/2016	FD	RAD	E901.1 E901.1	Cobalt-60, dissolved Europium-152	2.56 U	pCi/L
OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016	FD FD	RAD RAD	E901.1 E901.1	Europium-152 Europium-152, dissolved	13.3 U 2.29 U	pCi/L pCi/L
OS	SP-29B SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Europium-154	5.3 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Europium-154, dissolved	26.1 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Europium-155	-0.35 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Europium-155, dissolved	11.3 U	pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD	E900	Gross Alpha, decanted	4.88 U	pCi/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

		a Area II Grounawater	Sample		,	, , , , , , ,			
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
OS	SP-29B	SP29BGW01D003	8/12/2016		RAD	E900	Gross Beta, decanted	5.62 =	pCi/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016 8/12/2016	FD FD	RAD RAD	E901.1 E901.1	Lead-210 Lead-210, dissolved	-218 U -262 U	pCi/L pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Lead-212	-0.762 U	pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Lead-212, dissolved	7.79 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Lead-214	509 =	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Lead-214, dissolved	413 =	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Manganese-54	-2.97 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Manganese-54, dissolved	-10.4 U	pCi/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016 8/12/2016	FD FD	RAD RAD	E901.1 E901.1	Potassium-40 Potassium-40, dissolved	41.7 U -4.98 U	pCi/L pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Sodium-22	6.37 U	pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Sodium-22, dissolved	2.82 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E905.0	Strontium 89/90	-0.191 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Thallium-208	3.23 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Thallium-208, dissolved	-7.61 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Thorium-234	-165 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E901.1	Thorium-234, dissolved	-224 U	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	RAD	E906.0	Tritium	-35.6 U	pCi/L
OS OS	SP-29B SP-29B	SP29BGW01D003 SP29BGW01D003	8/12/2016 8/12/2016	FD FD	RAD RAD	Radioisotopes Radioisotopes	Uranium-233/-234 Uranium-235/236	0.992 = 0.0285 U	pCi/L pCi/L
OS		SP29BGW01D003	8/12/2016	FD	RAD		Uranium-238	0.352 =	pCi/L
OS	SP-29B	SP29BGW01D003	8/12/2016	FD	GENCHEM	E300	Fluoride	4.8 =	mg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloroethane 1,1-Dichloroethene	0.28 U 0.43 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016 7/19/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.45 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	VOC	SW8260B SW8260B	1,2-Dichlorosthana	0.46 U 0.24 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,2-Dichloroethane 1,2-Dichloropropane	0.42 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.42 U	μg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.9 J	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	VOC	SW8260B SW8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene	2.1 U 0.24 U	μg/L μg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L μg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N	VOC	SW8260B SW8260B	Bromochloromethane Bromodichloromethane	0.48 U 0.21 U	μg/L
PLF		HAR08GW01S007	7/19/2016	N N	VOC	SW8260B SW8260B	Bromodicnioromethane Bromoform	0.21 U 0.5 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	15 =	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	VOC	SW8260B SW8260B	cis-1,3-Dichloropropene Dibromochloromethane	0.25 U 0.25 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B SW8260B	Dibromomethane	0.25 U 0.46 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8315A	Formaldehyde	50 U	μg/L
	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016 7/19/2016	N N N	VOC VOC	SW8260B SW8260B	Hexachlorobutadiene Isopropanol	0.32 U 37 U	μg/L μg/L μg/L

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TABLE 3-3

Validated Analytical - All Results

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		a Area II Grounawater	Sample		,	, , , , , , ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
PLF	HAR-08	HAR08GW01S007	7/19/2016		VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	VOC	SW8260B SW8260B	Methylene chloride Methyl-tert-butyl Ether (MTBE)	0.64 U 0.31 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	n-butylbenzene	0.31 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
PLF PLF	HAR-08	HAR08GW01S007	7/19/2016	N N	VOC	SW8260B SW8260B	Tetrachloroethene Toluene	0.39 U 0.24 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	1.4 J	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
PLF		HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Trichloroethene	0.91 J	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	VOC	SW8260B	Vinyl chloride	5.3 =	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.012 =	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.8 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	HC HC	SW8015B SW8015B	Diesel Range Organics (C15-C20) Diesel Range Organics (C21-C30)	8 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016		HC	SW8015B	Diesel Range Organics (C21-C50)	8 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/L μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	HC	SW8015B	GRO (C4-C12)	48 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	НС	SW8015B	ORO (C31-C40)	8 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	HC	SW8015B	TPH C-7	8 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.0086 U	mg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	GENCHEM	E300	Fluoride	0.13 =	mg/L
PLF		HAR08GW01S007	7/19/2016		GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	GENCHEM	SW9040C	pH	6.54 =	pH units
PLF PLF	HAR-08 HAR-08	HAR08GW01S007 HAR08GW01S007	7/19/2016 7/19/2016	N N	ENRG_PROP ENRG_PROP	SW8330A SW8330A	1,3-Dinitrobenzene Nitrobenzene	0.057 U 0.063 U	μg/L
PLF	HAR-08	HAR08GW01S007	7/19/2016	N	ENRG PROP	E314	Perchlorate	0.063 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ		RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SBZ SBZ	RD-05A RD-05A	RD05AGW01S006 RD05AGW01S006	7/13/2016 7/13/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.46 U 0.51 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.51 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ		RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ		RD05AGW01S006	7/13/2016		VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ		RD05AGW01S006	7/13/2016		VOC		1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,2-Dichloropropane 1,3,5-Trimethylbenzene	0.42 U	μg/L
SBZ SBZ	RD-05A RD-05A	RD05AGW01S006 RD05AGW01S006	7/13/2016 7/13/2016	N N	VOC	SW8260B SW8260B	1,3-Dichlorobenzene	0.28 U 0.4 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.4 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016		VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016		VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016		VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ SBZ	RD-05A RD-05A	RD05AGW01S006 RD05AGW01S006	7/13/2016 7/13/2016	N N	VOC	SW8260B SW8260B	4-Methyl-2-pentanone (MIBK) Acetone	4.4 U 6 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016		VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	RD-05A	RD05AGW01S006	7/13/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
302									
SBZ SBZ	RD-05A RD-05A	RD05AGW01S006 RD05AGW01S006	7/13/2016 7/13/2016	N N	VOC VOC	SW8260B SW8260B	Bromoform Bromomethane	0.5 U 3.9 U	μg/L μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Site Location Sample ID Date Type Class Method Analyte	Final Result 0.23 U 0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.58 U 0.31 U 0.23 U 0.17 U 0.23 U	Units µg/L
SB2	0.17 U 2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.25 U	дд/L
SRZ RD-05A RD05AGW015006 7/13/2016 N VOC SW82608 Chlororethane	2.3 U 1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U	де/L
SBIZ RD-05A RD05AGW015006	1.8 U 1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U	нв/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Csh1,2-Dichloroethene Csh2, RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B csh1,2-Dichloroethene Csh2, RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B csh1,2-Dichloroperpene RD05AGW015006 7/13/2016 N VOC SW8260B csh1,2-Dichloroperpene RD05AGW015006 7/13/2016 N VOC SW8260B Dibromomchloromethane RD05AGW015006 7/13/2016 N VOC SW8260B Mexacthorobutadine RD05AGW015006 7/13/2016 N VOC SW8260B Respropanol Respression Respressio	1.8 U 0.48 U 0.25 U 0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U	нв/L
S82	0.25 U 0.25 U 0.46 U 0.46 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.23 U 0.17 U	нд/L
S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Dibromochloromethane S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Dibromochloromethane S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Eltryllenzene S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8315A Formaldelryde S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Hexphonorbuddlene S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Isporponol S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Isporponybenzene S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methylene chloride S8Z RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-tert-butyl Ether (MTBE) S8Z	0.25 U 0.46 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.23 U	нд/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Dichromomethane	0.46 U 0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.23 U	дд/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Ethylbenzene	0.46 U 0.14 U 20 U 0.32 U 37 U 0.58 U 0.3 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.23 U 0.17 U 0.23 U	µg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Ethylbenzene Formaldehyde SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Hexachlorobutadiene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Hexachlorobutadiene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Sopropanol SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Sopropanol SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B RD05AGW015006 7/13/2016 N VOC SW8260B RD05AGW015006 7/13/2016 N VOC SW8260B Methylene chloride RD05AGW015006 7/13/2016 N VOC SW8260B Sec-Butylbenzene SEZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Tert-Butylbenzene SEZ RD-05A R	0.14 U 20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.23 U 0.17 U 0.21 U 0.15 U 0.16 U 0.25 U 0.17 U	µg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8315A Formaldehyde SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Isopropanol SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Isopropanol SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Isopropylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-retr-butyl Ether (MTBE) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-retr-butyl Ether (MTBE) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-retr-butyl Ether (MTBE) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B N-Propylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B P-Isopropylbenzene SBZ </td <td>20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.25 U 0.16 U 0.25 U</td> <td>µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L</td>	20 U 0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.25 U 0.16 U 0.25 U	µg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW82608 Hexachlorobutadiene	0.32 U 37 U 0.58 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 0.17 U 0.25 U 0.17 U	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Isopropanol	0.58 U 0.3 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	μg/L μg/L μg/L μg/L μg/L μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B m,D-Xylenes SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-tert-butyl Ether (MTBE) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B n-butylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B n-butylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B n-bropylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Pentachloroethane SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Pentachloroethane SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A R	0.3 U 0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	μg/L μg/L μg/L μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methylene chloride	0.64 U 0.31 U 0.23 U 0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U	μg/L μg/L μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Methyl-tert-butyl Ether (MTBE)	0.31 U 0.23 U 0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	μg/L μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B n-butylbenzene	0.23 U 0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B n-Propylbenzene	0.17 U 0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B p-Matchforoethane SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Pentachforoethane SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B p-Isopropyltoluene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B sec-Butylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Toluene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A	0.23 U 1.5 UJ 0.16 U 0.25 U 0.17 U	μ ₆ / L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Pentachloroethane SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B p-lsopropyltoluene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Scr-Butylbenzene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B tert-Butylbenzene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B tert-Butylbenzene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform) SBZ	1.5 UJ 0.16 U 0.25 U 0.17 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B p-Isopropyltoluene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A	0.16 U 0.25 U 0.17 U	μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Styrene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B tert-Butylbenzene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Troluene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A	0.17 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B tert-Butylbenzene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Toluene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A	_	μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Tetrachloroethene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Toluene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B trans-1,3-Dichloropropene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloropropene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloropropene SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloropfluoromethane SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform) SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform)		μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N VOC SW8260B Toluene	0.28 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,2-Dichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,3-Dichloropropene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloromethane SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC E1625C n-Nitrosofmethylamine SBZ	0.39 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B trans-1,3-Dichloropropene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichlorofluoromethane SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichlorofluoromethane SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Vinyl chloride SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC E1625C n-Nitrosodimethylamine SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organi	0.24 U 0.37 U	μg/L μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloroethene SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichlorofluoromethane SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform) SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Vinyl chloride SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC E1625C n-Nitrosodimethylamine SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics	0.25 U	μg/L μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichlorofluoromethane SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Trichloromethane (Chloroform) SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Vinyl chloride SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC £1625C n-Nitrosodimethylamine SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C2-C10) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel R	0.37 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N VOC SW8260B Vinyl chloride SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC E1625C n-Nitrosodimethylamine SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C15-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C15-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B	1.7 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC E1625C n-Nitrosodimethylamine SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C31) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B OR	0.46 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N SVOC SW8315A Unsymetrical Dimethyl Hydrazine SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C15-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B	0.3 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C12-C14) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C15-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C31-C40) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N)	0.0031 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C15-C20) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B DRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N)	0.25 UJ 8 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C21-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B DRO (C31-C40) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) <t< td=""><td>8 U</td><td>μg/L μg/L</td></t<>	8 U	μg/L μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C11) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B Diesel Range Organics (C8-C30) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B DRO (C31-C40) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ R	8 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B GRO (C4-C12) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B DRO (C31-C40) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	8 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B ORO (C31-C40) SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	8 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N HC SW8015B TPH C-7 SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	48 UJ	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM 4500-NH3F Ammonia as Nitrogen (N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	8 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Fluoride SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	8 U 0.043 J	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM E300 Nitrogen, Nitrate (as N) SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	0.043 J	mg/L mg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N GENCHEM SW9040C pH SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	0.053 U	mg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP SW8330A 1,3-Dinitrobenzene	6.73 =	pH units
SR7 RD-054 RD054GW015006 7/13/2016 N FNRG PROD SW82204 Nitrohorzona	0.055 U	μg/L
SBZ RD-05A RD05AGW015006 7/13/2016 N ENRG_PROP SW8330A Nitrobenzene	0.061 U	μg/L
SBZ RD-05A RD05AGW01S006 7/13/2016 N ENRG_PROP E314 Perchlorate	0.41 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1,1-Trichloroethane SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1,2,2-Tetrachloroethane	0.3 U 0.41 U	μg/L
SBZ RD-05B RD05BGW015007 7/13/2016 N VOC SW8260B 1,1,2,2-Tetrachioroethane SBZ RD-05B RD05BGW015007 7/13/2016 N VOC SW8260B 1,1,2-Trichloro-1,2,2-trifluoroethane	0.41 U	μg/L μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1,2-Trichloroethane	0.38 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1-Dichloroethane	0.28 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1-Dichloroethene	0.43 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,1-Dichloropropene	0.46 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2,3-Trichlorobenzene	0.51 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2,3-Trichloropropane SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2,4-Trichlorobenzene	0.64 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2,4-Trichlorobenzene SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2,4-Trimethylbenzene	0.5 U 0.36 U	μg/L μg/L
SBZ RD-05B RD05BGW015007 7/13/2016 N VOC SW8260B 1,2-Dibromo-3-chloropropane	1.2 U	μg/L μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2-Dichlorobenzene	0.46 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2-Dichloroethane	0.24 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,2-Dichloropropane	0.42 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,3,5-Trimethylbenzene		μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,3-Dichlorobenzene	0.28 U	μg/L
SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,3-Dichloropropane SBZ RD-05B RD05BGW01S007 7/13/2016 N VOC SW8260B 1,4-Dichlorobenzene	0.28 U 0.4 U	μg/L
SBZ RD-05B RD05BGW015007 7/13/2016 N VOC SW8260B-SIM 1,4-Dictation oberitation SW8260B-SIM 1,4-Dioxane (P-Dioxane)	0.28 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

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Site SBZ	RD-05B RD-05B RD-05B RD-05B RD-05B	Sample ID RD05BGW01S007 RD05BGW01S007 RD05BGW01S007	7/13/2016 7/13/2016	Type N	Class VOC	Method SW8260B	Analyte 2,2-Dichloropropane	Final Result 0.36 U	Units
SBZ SBZ SBZ SBZ SBZ SBZ SBZ SBZ SBZ SBZ	RD-05B RD-05B RD-05B RD-05B	RD05BGW01S007		IN	VUC				
SBZ SBZ SBZ SBZ SBZ SBZ SBZ SBZ SBZ	RD-05B RD-05B RD-05B			N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ SBZ SBZ SBZ SBZ SBZ SBZ	RD-05B RD-05B		7/13/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L μg/L
SBZ SBZ SBZ SBZ SBZ SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L μg/L
SBZ SBZ SBZ SBZ SBZ		RD05BGW01S007	7/13/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ SBZ SBZ SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ SBZ SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Bromomethane	3.9 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016 7/13/2016	N	VOC	SW8260B	Dibromochloromethane Dibromomethane	0.25 U	μg/L
SBZ SBZ	RD-05B RD-05B	RD05BGW01S007 RD05BGW01S007	7/13/2016	N N	VOC	SW8260B SW8260B	Dibromomethane Dichlorodifluoromethane	0.46 U 0.46 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N N	VOC	SW8260B SW8260B	Dichlorodifluoromethane Ethylbenzene	0.46 U 0.14 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B SW8315A	Formaldehyde	32 J	μg/L μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Pentachloroethane	1.5 UJ	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
SBZ SBZ	RD-05B RD-05B	RD05BGW01S007	7/13/2016	N N	VOC	SW8260B SW8260B	trans-1,3-Dichloropropene	0.25 U 0.37 U	μg/L
SBZ	RD-05B	RD05BGW01S007 RD05BGW01S007	7/13/2016 7/13/2016	N	VOC	SW8260B	Trichloroethene Trichlorofluoromethane	1.7 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.013 =	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 UJ	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	14 J	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	НС	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	14 J	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	GRO (C4-C12)	48 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	ORO (C31-C40)	8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	HC	SW8015B	TPH C-7	8 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.051 =	mg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	GENCHEM	E300	Fluoride	0.11 =	mg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	GENCHEM	SW9040C	pH	9.07 =	pH unit
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.055 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.061 U	μg/L
SBZ	RD-05B	RD05BGW01S007	7/13/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	, Third Quarter 2	016, SSFL, Venti	ura County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ SBZ	RD-05C RD-05C	RD05CGW01S006	7/14/2016	N N	VOC	SW8260B SW8260B	1,2-Dichlorosthans	0.46 U 0.24 U	μg/L
SBZ	RD-05C	RD05CGW01S006 RD05CGW01S006	7/14/2016 7/14/2016	N	VOC	SW8260B	1,2-Dichloroethane 1,2-Dichloropropane	0.42 U	μg/L μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.42 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8315A	Formaldehyde	30 J	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016		VOC	SW8260B	Trichloroethene	0.37 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 UJ	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	GRO (C4-C12)	48 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	ORO (C31-C40)	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	HC	SW8015B	TPH C-7	8 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	Ν	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.14 =	mg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area | LOX and Area || Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX an	d Area II Groundwater		Keport	, Third Quarter 2	016, SSFL, Venti	ira County, California	ı	
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	GENCHEM	E300	Fluoride	0.12 =	mg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	GENCHEM	SW9040C	pH	7.27 =	pH units
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.052 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.057 U	μg/L
SBZ	RD-05C	RD05CGW01S006	7/14/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SBZ SBZ	SP-881C SP-881C	SP881CGW01S005 SP881CGW01S005	7/20/2016 7/20/2016	N	VOC	SW8260B SW8260B	1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.46 U 0.51 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N N	VOC	SW8260B	1,2,3-Trichloropropane	0.51 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.56 J	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ SBZ	SP-881C SP-881C	SP881CGW01S005 SP881CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	4-Methyl-2-pentanone (MIBK) Acetone	4.4 U 6 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	17 =	μg/L
SBZ		SP881CGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ SBZ	SP-881C SP-881C	SP881CGW01S005 SP881CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Isopropanol Isopropylbenzene	160 = 0.58 U	μg/L
SBZ	SP-881C SP-881C	SP881CGW01S005 SP881CGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	m,p-Xylenes	0.58 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Methylene chloride	0.5 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.04 U	μg/L μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016		VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Toluene	0.33 J	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	2 J	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ SBZ	SP-881C SP-881C	SP881CGW01S005 SP881CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Trichloromethane (Chloroform) Vinyl chloride	0.46 U 0.36 J	μg/L μg/L
SBZ		SP881CGW013005	7/20/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloroethene 1,1-Dichloropropene	0.43 U 0.46 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.40 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	1,2-Dichloropropane 1,3,5-Trimethylbenzene	0.42 U 0.28 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	1,3-Dichlorobenzene	0.28 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.4 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	0.62 J	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	2-Chlorotoluene 2-Hexanone	0.24 U 2.1 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ SBZ		SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Bromomethane Carbon tetrachloride	3.9 UJ 0.23 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	23 =	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Dibromomethane Dichlorodifluoromethane	0.46 U 0.46 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016		VOC	SW8260B	Ethylbenzene	0.46 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016		VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Isopropanol	190 =	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	Methyl-tert-butyl Ether (MTBE) n-butylbenzene	0.31 U 0.23 U	μg/L
SBZ		SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	n-putylbenzene n-Propylbenzene	0.23 U 0.17 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016		VOC	SW8260B	o-Xylene	0.17 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ	SP-881G SP-881G	SP881GGW01S005 SP881GGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	Toluene trans-1,2-Dichloroethene	0.24 U 5 J	μg/L
SBZ SBZ	SP-881G SP-881G	SP881GGW01S005 SP881GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L μg/L
SBZ		SP881GGW01S005	7/20/2016		VOC	SW8260B	Trichloroethene	0.37 U	μg/L μg/L
SBZ	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SBZ		SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
CD7	SP-881G	SP881GGW01S005	7/20/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
SBZ SBZ		SP881GGW01S005	7/20/2016		SVOC		n-Nitrosodimethylamine	0.0029 U	1.0

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,2-Trichloroethane	0.45 U 0.38 U	μg/L μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.38 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ	SP-882B SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ SBZ		SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	1,2,4-Trimethylbenzene 1,2-Dibromo-3-chloropropane	0.36 U 1.2 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B-SIM	1,4-Dichlorobenzene 1,4-Dioxane (P-Dioxane)	0.43 U 0.35 U	μg/L μg/L
SBZ		SP882BGW01S004 SP882BGW01S004	7/15/2016	N	VOC	SW8260B-SIIVI	2,2-Dichloropropane	0.35 U	μg/L μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ SBZ		SP882BGW01S004 SP882BGW01S004	7/15/2016	N	VOC	SW8260B SW8260B	Acetone	6 U 0.14 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	Chloromethane	1.8 U 1.8 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Chlorotrifluoroethylene cis-1,2-Dichloroethene	0.48 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ SBZ		SP882BGW01S004 SP882BGW01S004	7/15/2016	N N	VOC	SW8260B SW8260B	Isopropulhenzene	37 U	μg/L
SBZ		SP882BGW01S004 SP882BGW01S004	7/15/2016		VOC	SW8260B SW8260B	m,p-Xylenes	0.58 U 0.3 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	p-Isopropyltoluene sec-Butylbenzene	0.16 U 0.25 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Styrene	0.23 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
SBZ		SP882BGW01S004	7/15/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
SBZ SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016	N	VOC	SW8260B	Trichloromethane Trichloromethane (Chloroform)	1.7 U 0.46 U	μg/L
SBZ	SP-882B SP-882B	SP882BGW01S004 SP882BGW01S004	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	Trichloromethane (Chloroform) Vinyl chloride	0.46 U	μg/L μg/L
SBZ	SP-882B	SP882BGW01S004	7/15/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L μg/L
SBZ		SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ		SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX an	d Area II Groundwater		Report	t, Third Quarter 2	016, SSFL, Venti	ura County, California		
Site	Location	Samula ID	Sample Date	Tuna	Class	Method	Analyta	Final Result	Units
SBZ	SP-882G	Sample ID SP882GGW01S005	7/14/2016	Type N	VOC	SW8260B	Analyte 1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.43 U	μg/L μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	Ν	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ SBZ	SP-882G SP-882G	SP882GGW01S005 SP882GGW01S005	7/14/2016 7/14/2016	N N	VOC	SW8260B SW8260B	2-Chloro-1,1,1-trifluoroethane 2-Chlorotoluene	2.1 U 0.24 U	μg/L
SBZ	SP-882G SP-882G	SP882GGW01S005 SP882GGW01S005	7/14/2016	N	VOC	SW8260B SW8260B	2-Hexanone	0.24 U 2.1 U	μg/L μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	Ν	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SBZ SBZ	SP-882G SP-882G	SP882GGW01S005 SP882GGW01S005	7/14/2016 7/14/2016	N N	VOC	SW8260B SW8260B	Dichlorodifluoromethane Ethylbenzene	0.46 U 0.14 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.14 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ		SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Toluene	0.37 J	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Trichloroethene Trichloroflygramethana	0.37 U	μg/L
SBZ	SP-882G	SP882GGW01S005	7/14/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SBZ SBZ	SP-882G SP-882G	SP882GGW01S005 SP882GGW01S005	7/14/2016	N	VOC	SW8260B SW8260B	Trichloromethane (Chloroform) Vinyl chloride	0.46 U 0.3 U	μg/L
SBZ	SP-882G SP-882G	SP882GGW01S005 SP882GGW01S005	7/14/2016 7/14/2016	N N	SVOC	E1625C	n-Nitrosodimethylamine	0.3 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/14/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.4 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area | LOX and Area || Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA AI	eu i Lox uni	d Area II Groundwater	Sample	кероп	, mira Quarter 2	016, SSFL, VEIIL	ura County, Canjornia		
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethene	1.4 J	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	3.5 U	μg/L
SBZ SBZ	SP-890C SP-890C	SP890CGW01S005 SP890CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	2,2-Dichloropropane 2-Butanone (MEK)	0.36 U 2.2 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ	SP-890C SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	2-Chlorotoluene	0.24 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	Ν	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	400 =	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ SBZ	SP-890C SP-890C	SP890CGW01S005 SP890CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Dibromochloromethane Dibromomethane	0.25 U 0.46 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Ethylbenzene	0.40 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Isopropanol	88 J	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ		SP890CGW01S005	7/20/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Tetrachloroethene Teluana	0.39 U	μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SBZ	SP-890C	SP890CGW01S005 SP890CGW01S005	7/20/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	24 =	μg/L
SBZ SBZ	SP-890C SP-890C	SP890CGW01S005 SP890CGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	trans-1,3-Dichloropropene Trichloroethene	0.25 U 150 =	μg/L μg/L
SBZ	SP-890C SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B SW8260B	Trichlorofluoromethane	150 = 1.7 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	VOC	SW8260B	Vinyl chloride	0.52 =	μg/L μg/L
SBZ	SP-890C	SP890CGW01S005	7/20/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0031 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloroethene	2.9 J	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA Ar	ea I LOX and	d Area II Groundwater	Monitoring	Report	, Third Quarter 2	016, SSFL, Vent	ura County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SBZ SBZ	SP-890G SP-890G	SP890GGW01S005 SP890GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	1,2-Dichloroethane	0.24 U 0.42 U	μg/L
SBZ	SP-890G SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,2-Dichloropropane 1,3,5-Trimethylbenzene	0.42 U	μg/L μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B-SIM	1,4-Dioxane (P-Dioxane)	3.5 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	Ν	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Acetone	6 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Benzene	0.14 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Bromobenzene	0.3 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Bromomethane Carbon tetrachloride	3.9 UJ 0.23 U	μg/L
SBZ SBZ	SP-890G SP-890G	SP890GGW01S005 SP890GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	Chlorobenzene	0.23 U 0.17 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	650 =	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	Ν	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Isopropanol	86 J	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SBZ		SP890GGW01S005	7/20/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SBZ SBZ	SP-890G SP-890G	SP890GGW01S005 SP890GGW01S005	7/20/2016 7/20/2016	N N	VOC	SW8260B SW8260B	sec-Butylbenzene Styrene	0.25 U 0.17 U	μg/L μg/L
SBZ	SP-890G SP-890G	SP890GGW01S005 SP890GGW01S005	7/20/2016		VOC	SW8260B SW8260B	tert-Butylbenzene	0.17 U 0.28 U	μg/L μg/L
SBZ	SP-890G SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Tetrachloroethene	0.28 U	μg/L μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	24 =	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Trichloroethene	340 =	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Vinyl chloride	3.6 =	μg/L
SBZ	SP-890G	SP890GGW01S005	7/20/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0029 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1-Dichloroethane	0.28 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1-Dichloroethene	0.43 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.46 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

NASA AF	ea i LOX and	d Area II Groundwater 		керогі	, Thira Quarter 2	016, 33FL, Venti	Tra County, California		
Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	E504.1	1,2-Dibromo-3-chloropropane	0.0023 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2-Dibromoethane (EDB)	0.36 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	E504.1	1,2-Dibromoethane (EDB)	0.0019 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2-Dichlorobenzene	0.46 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC		1,4-Dioxane (P-Dioxane)	0.35 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	2,2-Dichloropropane	0.36 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SPA SPA	HAR-05 HAR-05	HAR05GW01S006 HAR05GW01S006	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	4-Methyl-2-pentanone (MIBK) Acetone	4.4 U 6 U	μg/L ug/l
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B SW8260B	Benzene	0.14 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Bromodichloromethane	0.48 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Chloroethane	2.3 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Chloromethane	1.8 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Chlorotrifluoroethylene	1.8 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Dichlorodifluoromethane	0.46 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Ethylbenzene	0.14 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8315A	Formaldehyde	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SPA SPA	HAR-05 HAR-05	HAR05GW01S006 HAR05GW01S006	7/15/2016 7/15/2016	N N	VOC	SW8260B SW8260B	Isopropanol	75 J 0.58 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Isopropylbenzene m,p-Xylenes	0.3 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Methylene chloride	0.5 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	n-butylbenzene	0.23 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	n-Propylbenzene	0.17 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	o-Xylene	0.23 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Pentachloroethane	1.5 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Trichloroethene	0.37 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
SPA SPA	HAR-05 HAR-05	HAR05GW01S006 HAR05GW01S006	7/15/2016 7/15/2016	N N	SVOC	SW8260B SW8315A	Vinyl chloride Hydrazine	0.3 U 0.2 UJ	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	SVOC	SW8315A SW8315A	Monomethyl Hydrazine	0.2 UJ	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016		SVOC	E1625C	n-Nitrosodimethylamine	0.8 UJ 0.0029 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.0029 UJ	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	Diesel Range Organics (C8-C11)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	Diesel Range Organics (C8-C30)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	GRO (C4-C12)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	ORO (C31-C40)	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	HC	SW8015B	TPH C-7	50 U	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.025 J	mg/L

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TABLE 3-3

Validated Analytical - All Results

NASA Area | LOX and Area || Groundwater Monitorina Report. Third Quarter 2016. SSFL. Ventura County. California

			Sample						
Site	Location	Sample ID	Date	Туре	Class	Method	Analyte	Final Result	Units
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	GENCHEM	E300	Fluoride	0.22 =	mg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.053 U	mg/L
SPA	HAR-05	HAR05GW01S006 HAR05GW01S006	7/15/2016 7/15/2016	N N	GENCHEM ENDC DROD	SW9040C	pH 1.3 Dinitrohanzana	7.04 = 0.055 U	pH units
SPA SPA	HAR-05 HAR-05	HAR05GW01S006	7/15/2016	N	ENRG_PROP ENRG_PROP	SW8330A SW8330A	1,3-Dinitrobenzene Nitrobenzene	0.055 U	μg/L μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,1,1,2-Tetrachloroethane	0.4 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,1,1-Trichloroethane	0.3 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,1,2,2-Tetrachloroethane	0.41 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,1,2-Trichloro-1,2,2-trifluoroethane	0.45 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,1,2-Trichloroethane	0.38 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B SW8260B	1,1-Dichloroethane 1,1-Dichloroethene	0.28 U 0.43 U	μg/L μg/L
SPA	HAR-23	HAR23GW013000	7/18/2016	N	VOC	SW8260B	1,1-Dichloropropene	0.45 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2,3-Trichlorobenzene	0.51 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2,3-Trichloropropane	0.64 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2,4-Trichlorobenzene	0.5 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2,4-Trimethylbenzene	0.36 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dibromo-3-chloropropane	1.2 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	E504.1	1,2-Dibromo-3-chloropropane	0.0023 U	μg/L
SPA SPA	HAR-23 HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B E504.1	1,2-Dibromoethane (EDB) 1,2-Dibromoethane (EDB)	0.36 U 0.0019 U	μg/L μg/L
SPA	HAR-23	HAR23GW015006	7/18/2016	N	VOC	SW8260B	1,2-Dioromoethane (EDB) 1,2-Dichlorobenzene	0.0019 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dichloroethane	0.24 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,2-Dichloropropane	0.42 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,3,5-Trimethylbenzene	0.28 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,3-Dichlorobenzene	0.4 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	1,3-Dichloropropane	0.3 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N N	VOC	SW8260B	1,4-Dichlorobenzene	0.43 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016 7/18/2016	N	VOC	SW8260B-SIM SW8260B	1,4-Dioxane (P-Dioxane) 2,2-Dichloropropane	0.54 J 0.36 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	2-Butanone (MEK)	2.2 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	2-Chloro-1,1,1-trifluoroethane	2.1 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	2-Chlorotoluene	0.24 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	2-Hexanone	2.1 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	4-Chlorotoluene	0.13 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	4-Methyl-2-pentanone (MIBK)	4.4 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B SW8260B	Acetone Benzene	6 U 0.14 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Bromobenzene	0.14 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Bromochloromethane	0.48 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Bromodichloromethane	0.21 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Bromoform	0.5 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Bromomethane	3.9 UJ	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Carbon tetrachloride	0.23 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016 7/18/2016	N	VOC	SW8260B	Chlorobenzene	0.17 U 2.3 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016	N N	VOC	SW8260B SW8260B	Chloromethane Chloromethane	2.3 U	μg/L μg/L
SPA		HAR23GW01S006	7/18/2016	N	VOC		Chlorotrifluoroethylene	1.8 U	μg/L
SPA		HAR23GW01S006	7/18/2016	N	VOC	SW8260B	cis-1,2-Dichloroethene	0.48 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	cis-1,3-Dichloropropene	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Dibromochloromethane	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Dibromomethane	0.46 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016 7/18/2016	N	VOC	SW8260B	Dichlorodifluoromethane Ethylbenzene	0.46 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016	N N	VOC	SW8260B SW8315A	Formaldehyde	0.14 U 20 U	μg/L μg/L
SPA	HAR-23	HAR23GW013000	7/18/2016	N	VOC	SW8260B	Hexachlorobutadiene	0.32 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Isopropanol	37 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Isopropylbenzene	0.58 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	m,p-Xylenes	0.3 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Methylene chloride	0.64 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Methyl-tert-butyl Ether (MTBE)	0.31 U	μg/L
SPA	HAR-23	HAR23GW01S006 HAR23GW01S006	7/18/2016	N	VOC	SW8260B	n-butylbenzene n-Propylbenzene	0.23 U	μg/L
SPA SPA	HAR-23	HAR23GW01S006	7/18/2016 7/18/2016	N N	VOC	SW8260B SW8260B	o-Xylene	0.17 U 0.23 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B SW8260B	Pentachloroethane	1.5 U	μg/L μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	p-Isopropyltoluene	0.16 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	sec-Butylbenzene	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Styrene	0.17 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	tert-Butylbenzene	0.28 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Tetrachloroethene	0.39 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Toluene	0.24 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	trans-1,2-Dichloroethene	0.37 U	μg/L

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TABLE 3-3
Validated Analytical - All Results

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, California

			Sample						
Site	Location	Sample ID	Date	Type	Class	Method	Analyte	Final Result	Units
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	trans-1,3-Dichloropropene	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Trichloroethene	1.1 J	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Trichlorofluoromethane	1.7 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	VOC	SW8260B	Trichloromethane (Chloroform)	0.46 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	VOC	SW8260B	Vinyl chloride	0.3 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	SVOC	SW8315A	Hydrazine	0.06 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	SVOC	SW8315A	Monomethyl Hydrazine	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	SVOC	E1625C	n-Nitrosodimethylamine	0.0078 J	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	SVOC	SW8315A	Unsymetrical Dimethyl Hydrazine	0.25 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C12-C14)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C15-C20)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	HC	SW8015B	Diesel Range Organics (C21-C30)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	HC	SW8015B	Diesel Range Organics (C8-C11)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	HC	SW8015B	Diesel Range Organics (C8-C30)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	HC	SW8015B	GRO (C4-C12)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	HC	SW8015B	ORO (C31-C40)	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	HC	SW8015B	TPH C-7	50 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	GENCHEM	4500-NH3F	Ammonia as Nitrogen (N)	0.03 J	mg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	Ν	GENCHEM	E300	Fluoride	0.33 =	mg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	GENCHEM	E300	Nitrogen, Nitrate (as N)	0.4 =	mg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	GENCHEM	SW9040C	рН	6.98 =	pH units
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	ENRG_PROP	SW8330A	1,3-Dinitrobenzene	0.056 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	ENRG_PROP	SW8330A	Nitrobenzene	0.062 U	μg/L
SPA	HAR-23	HAR23GW01S006	7/18/2016	N	ENRG_PROP	E314	Perchlorate	0.41 U	μg/L

µg/L = microgram(s) per liter <u>Class Abbreviations:</u>

FD = field duplicate sample ENER_PROP = energetics and propellants PHTH = phthalates ID = identification number GENCHEM = general chemistry RAD = radionuclide

mg/L = milligram(s) per liter HC = hydrocarbons SVOC = semivolatile organic compound N = normal sample INO = inorganics VOC = volatile organic compound

pCi/L = picoCurie(s) per liter

<u>Field Duplicate Associations:</u> <u>Site Abbreviations:</u>

SP29BGW01S003 = SP29BGW01D003 A1 = Area 1 NBZ = Northern Buffer Zone

WS04AGW01S006 = WS04AGW01D006 ALF = Alfa Area OS = offsite

BRV = Bravo Area PLF = Propellant Load Facility
CA = Coca Area SBZ = Southern Buffer Zone
DTA = Delta Area SPA = Storage Propellant Area

Validation Flags

J

- ${\sf U} \qquad {\sf Analyte} \ {\sf is} \ {\sf present} \ {\sf but} \ {\sf the} \ {\sf reported} \ {\sf quantitation} \ {\sf is} \ {\sf estimated}.$
- UJ Analyte was not detected at the specified detection limit.
- Estimated detection limit. The result is estimated and may be a false negative due to related QC problems.

 $Reported\ quantitation\ represents\ the\ most\ accurate\ concentration\ for\ the\ given\ analyte.$

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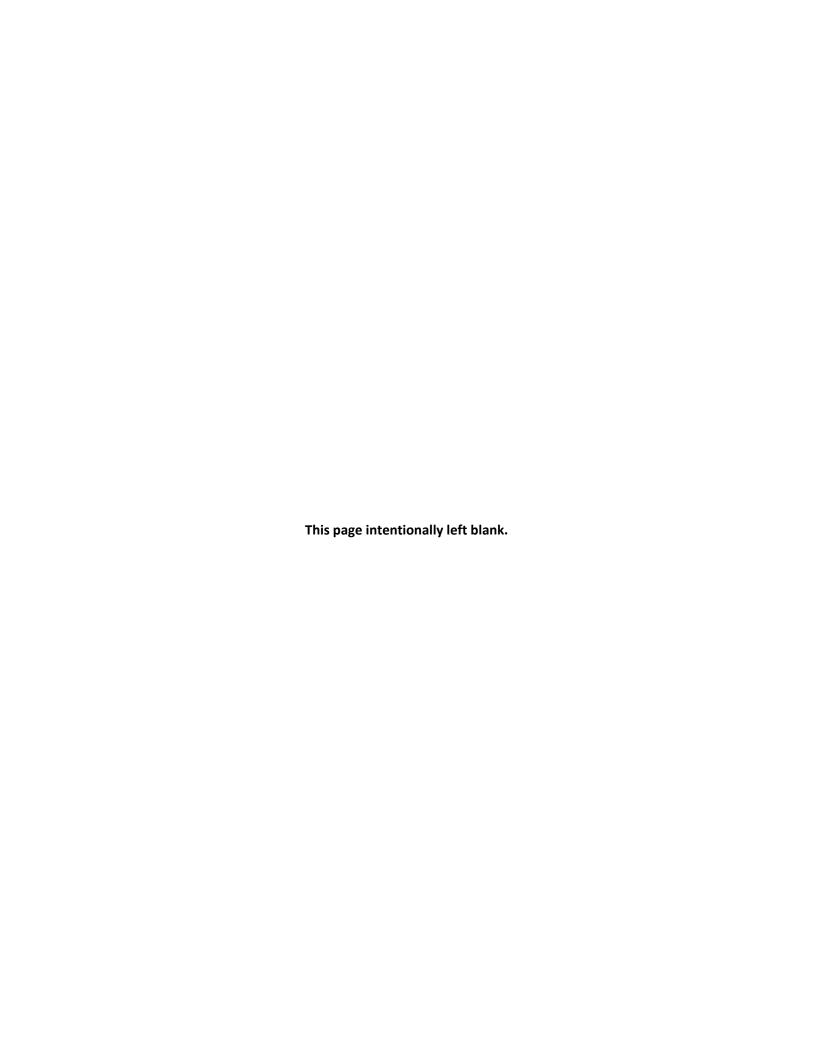


TABLE 3-4
Validated Analytical - First-Time Detections

NASA Area I LOX and Area II Groundwater Monitoring Report, Third Quarter 2016, SSFL, Ventura County, Californic

Site	Location	Sample ID	Sample Date	Туре	Class	Method	Analyte	Final Result	Units
A1	WS-04A	WS04AGW01D006	7/14/2016	FD	PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.077 J	μg/L
ALF	HAR-11	HAR11GW01S007	7/19/2016	N	voc	SW8260B	Isopropanol	170 =	μg/L
	HAR-20	HAR20GW01S006	7/12/2016	N	PHTH	SW8270C-SIM	Dimethyl phthalate	0.045 J	μg/L
	RD-49C	RD49CGW01S006	7/19/2016	N	PHTH	SW8270C-SIM	Di-n-butyl phthalate	0.12 J	μg/L
					ENRG_PROP	E314	Perchlorate	3.4 =	μg/L
BRV	HAR-19	HAR19GW01S016	7/26/2016	N	voc	SW8260B	Isopropanol	61 J	μg/L
					PHTH	SW8270C-SIM	Butyl benzyl phthalate	0.11 J	μg/L
	HAR-21	HAR21GW01S006	7/18/2016	N	нс	SW8015B	GRO (C4-C12)	53 =	μg/L
os	RD-68B	RD68BGW01S006	8/12/2016	N	PHTH	SW8270C-SIM	Dimethyl phthalate	0.39 J	μg/L
SBZ	SP-881C	SP881CGW01S005	7/20/2016	N	voc	SW8260B	Isopropanol	160 =	μg/L
	SP-890C	SP890CGW01S005	7/20/2016	N	voc	SW8260B	Isopropanol	88 J	μg/L
	SP-890G	SP890GGW01S005	7/20/2016	N	VOC	SW8260B	Isopropanol	86 J	μg/L
SPA	HAR-05	HAR05GW01S006	7/15/2016	N	VOC	SW8260B	Isopropanol	75 J	μg/L

The results in *italic gray* font were reported below their respective screening level values.

The result in **bold** font was reported at or above the respective screening level value.

μg/L = microgram(s) per liter

FD = field duplicate sample

ID = identification number

N = normal sample

Class Abbreviations:

Site Abbreviations:

A1 = Area 1

 is:
 Field Duplicate Association:

 OS = offsite
 WS04AGW01S006 = WS04AGW01D006

ENER_PROP = energetics and propellants

HC = hydrocarbons

PHTH = phthalates

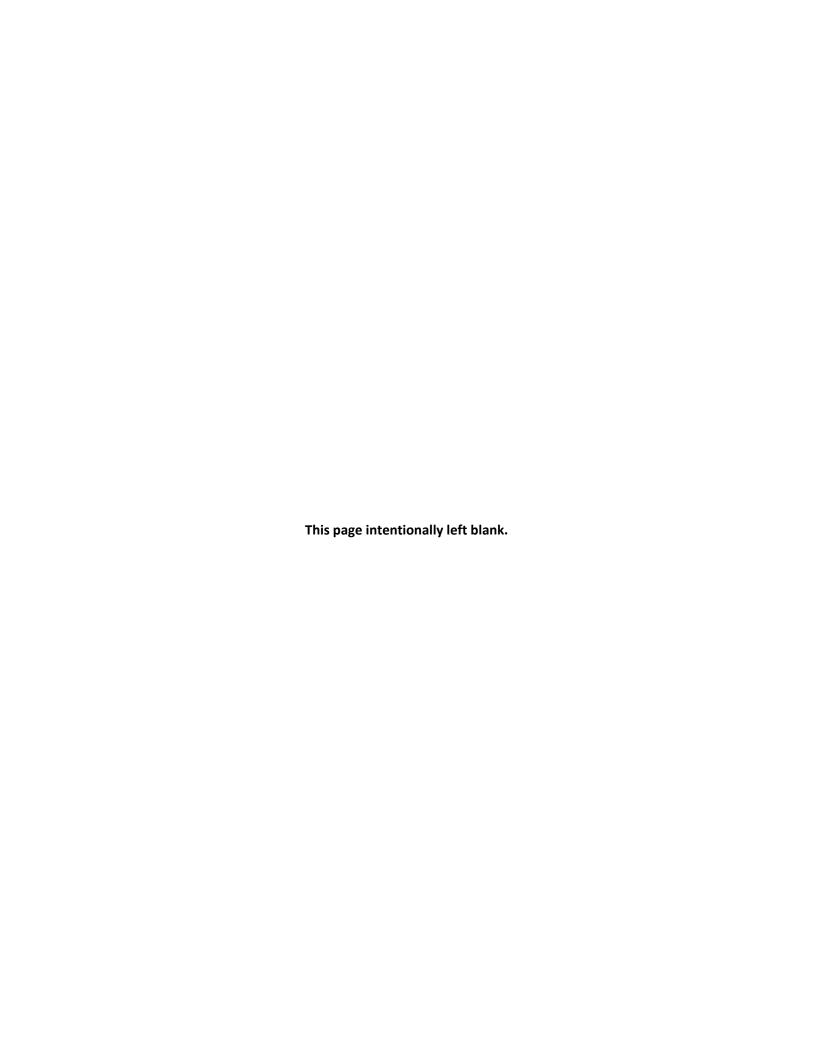
ALF = Alfa Area SBZ = Southern Buffer Zone BRV = Bravo Area SPA = Storage Propellant Area

VOC = volatile organic compound

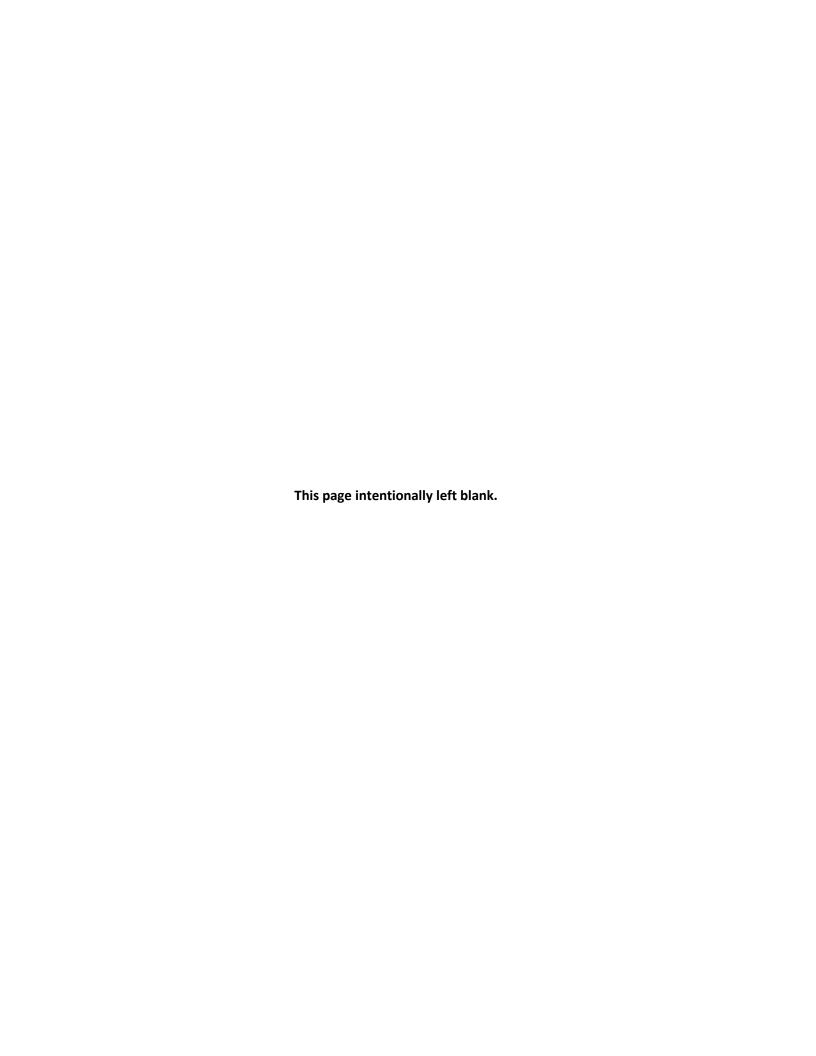
Validation Flags:

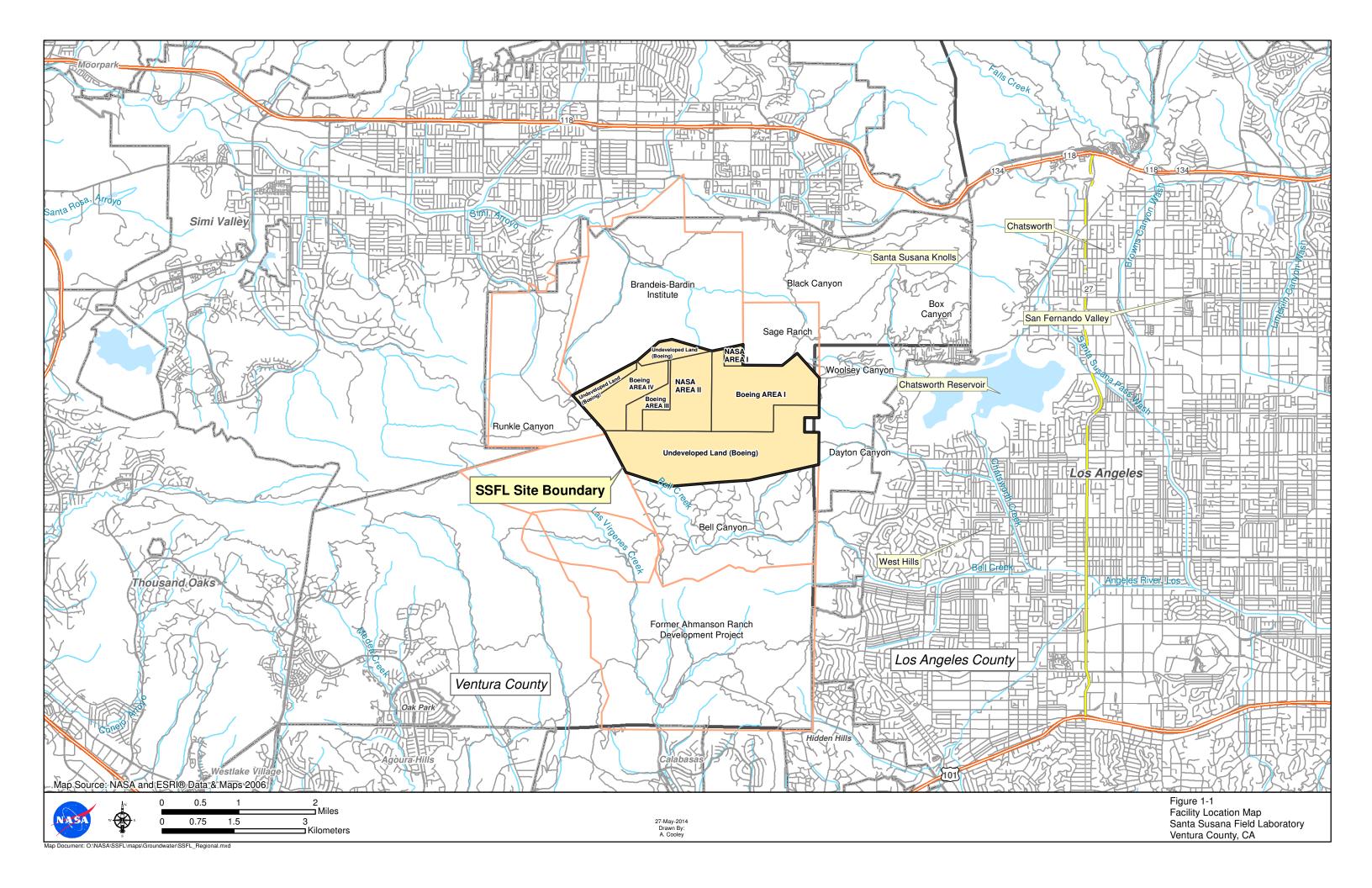
- J Analyte is present but the reported quantitation is estimated.
- = Reported quantitation represents the most accurate concentration for the given analyte.

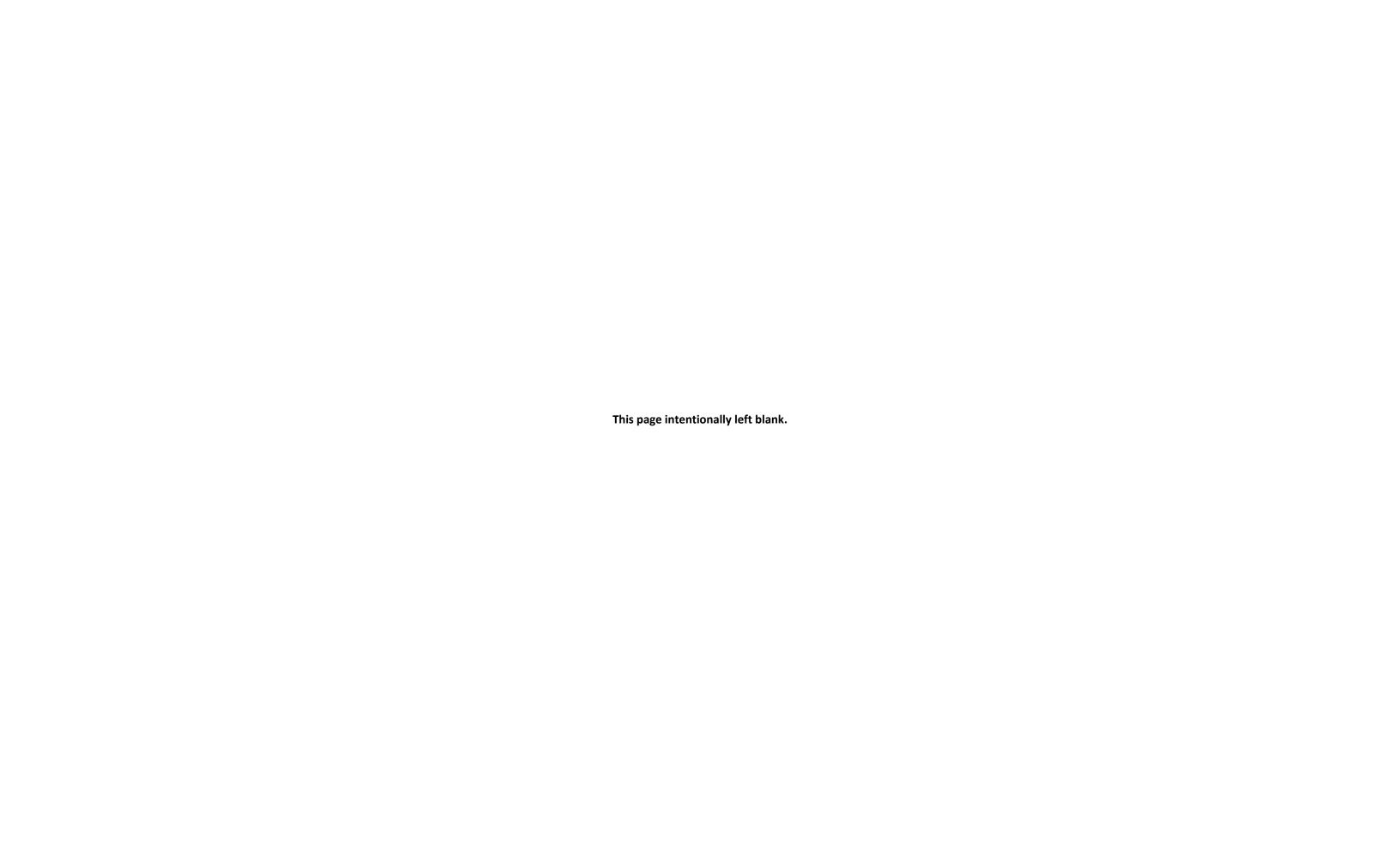
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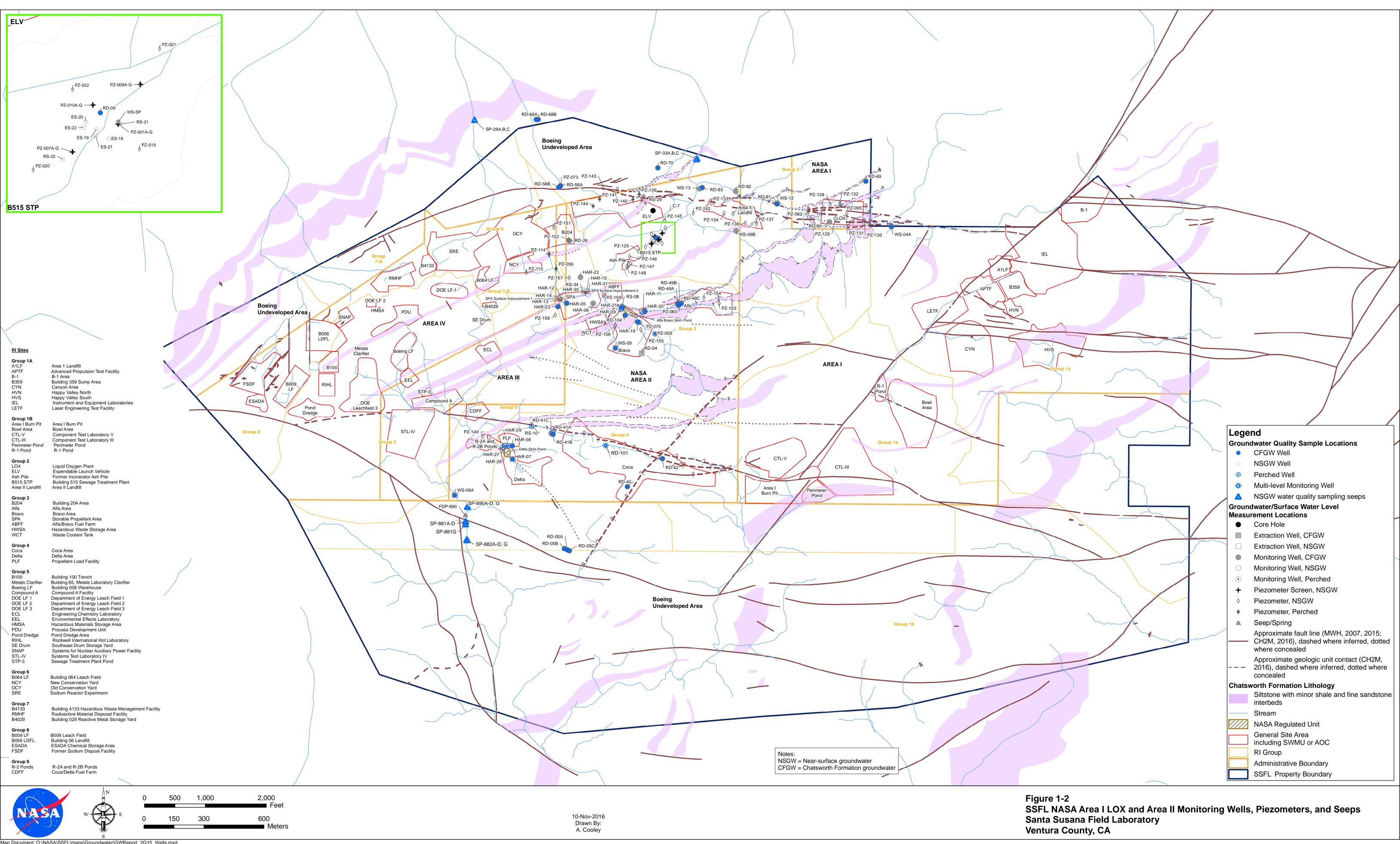


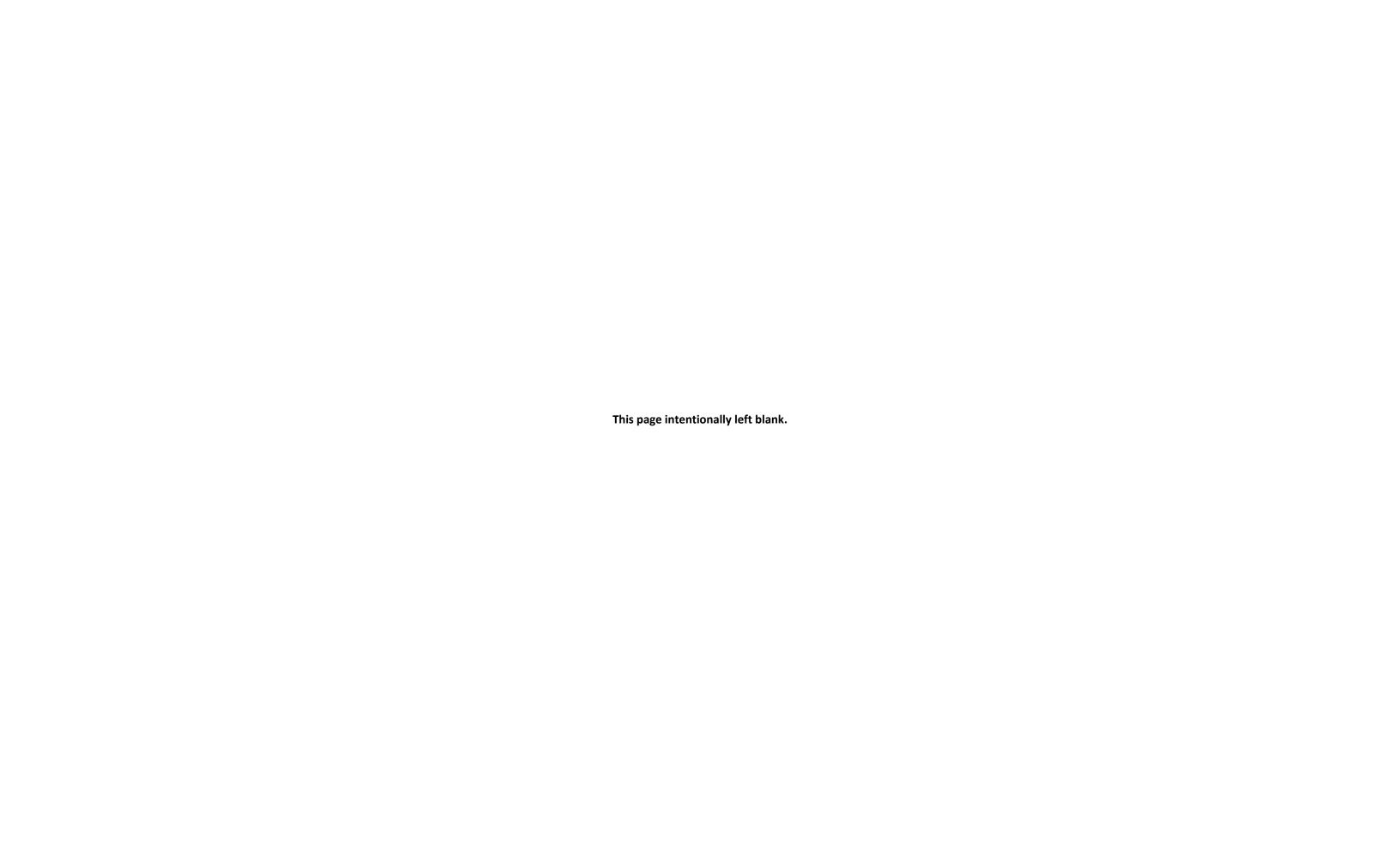


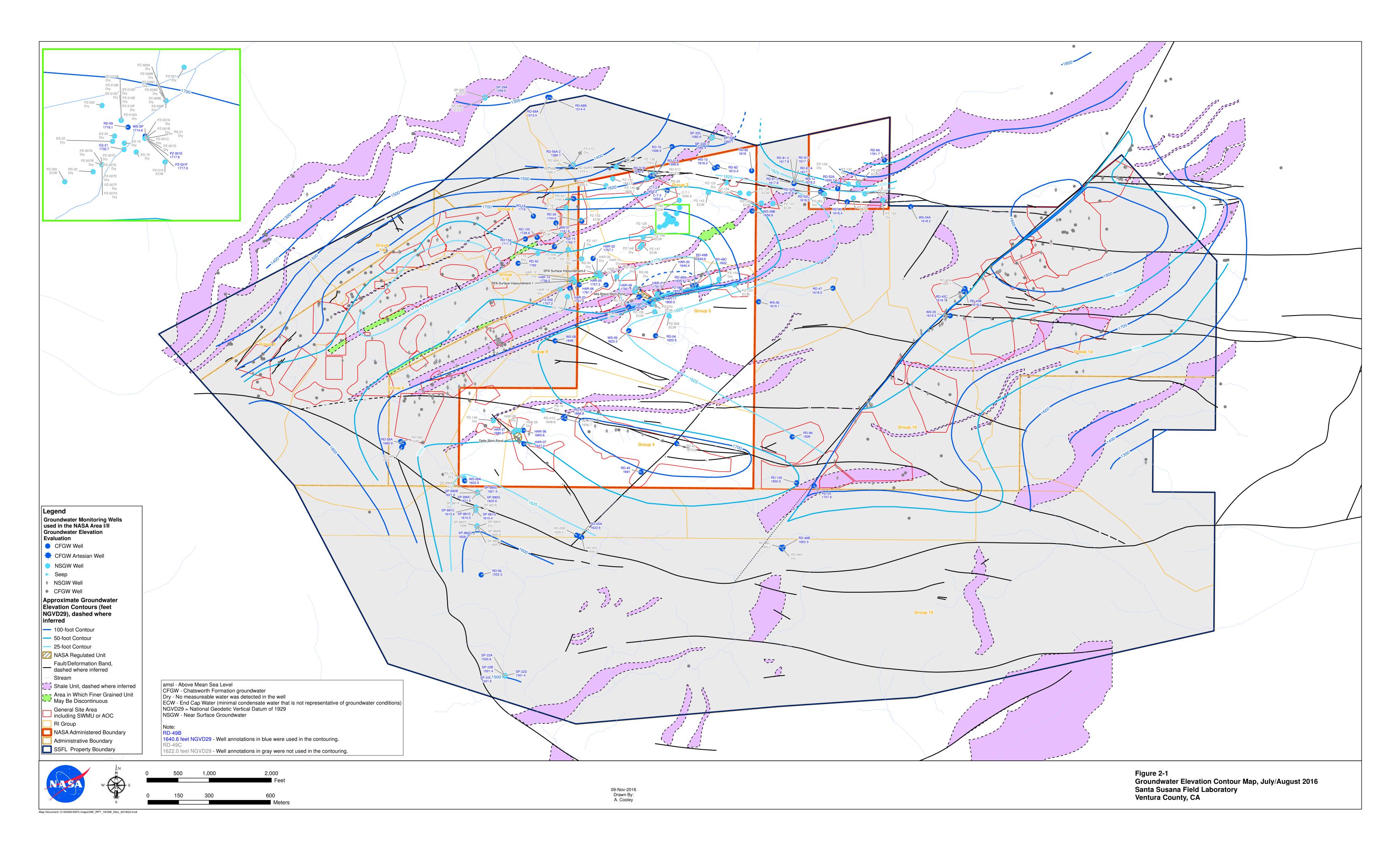


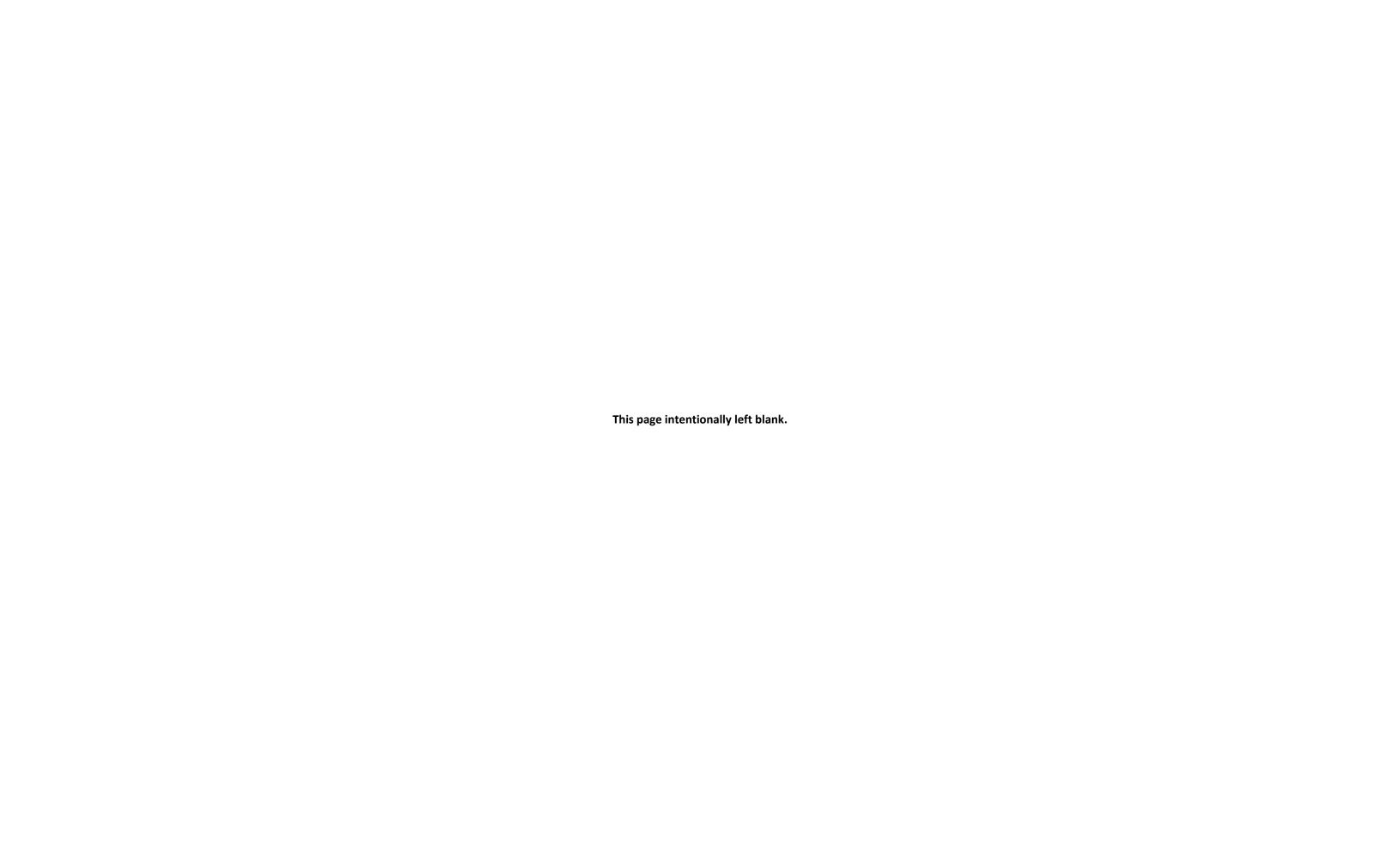




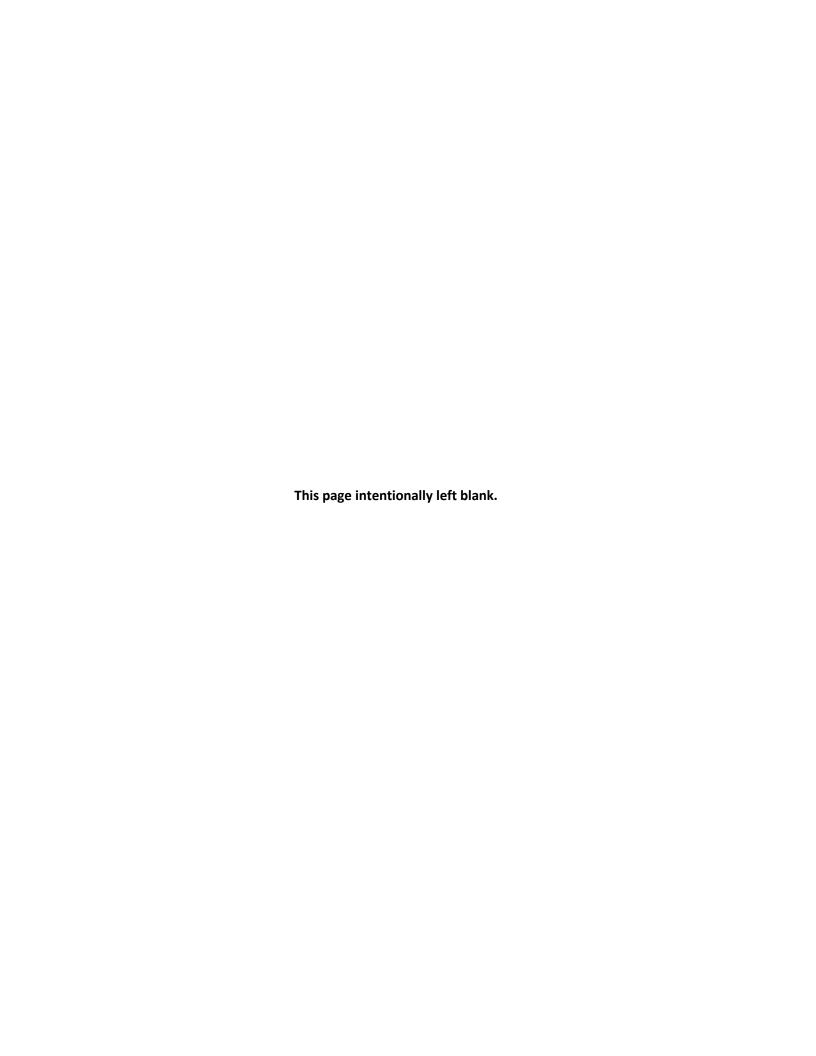








Appendix A Seeps near WS-09A, July through September 2016





HARGIS + ASSOCIATES, INC.

HYDROGEOLOGY • ENGINEERING

La Jolla Gateway 9171 Towne Centre Drive, Suite 375 San Diego, CA92122

Phone: 858.455.6500 Fax: 858.455.6533

October 14, 2016

VIA EMAIL

Mr. Jeff Wokurka, PG, CEG THE BOEING COMPANY Santa Susana Field Laboratory 5800 Woolsey Canyon Road Canoga Park, CA91304

Re: Status Report July through September 2016,

Seeps in Vicinity of WS-9A, Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Wokurka,

This letter reports the status of The Boeing Company's (Boeing's) and the National Aeronautics and Space Administration's (NASA's) recent activity at the subject seeps from July 1 through September 30, 2016.

Boeing and NASA continued to perform weekly inspections of the seeps alternating monthly from July1 through September 30, 2016. During this period, a combined total of 0 (zero) gallons was pumped from all seeps; 0 (zero) gallons from FDP-881, 0 (zero) gallons from FDP-882, and 0 (zero) gallons from FDP-890.

Per direction of the California Department of Toxic Substances Control, the Interim Groundwater Extraction and Treatment System (Interim GET System) has been off since April 2013. Re-start of the Interim GET System is scheduled for 2017, following completion of construction activities related to the Interim GET System and obtainment of a discharge permit. The seeps will continue to be monitored and pumped to confirm that operational downtime of extraction well WS-9A does not result in accumulation of water in the seeps.

A total of 0 (zero) gallons of water was extracted from extraction well WS-9A during the period of July through September, 2016, with a total 10,637,797gallons having been extracted from extraction well WS-9A since October 26, 2009.

Sincerely,

HARGIS + ASSOCIATES, INC.

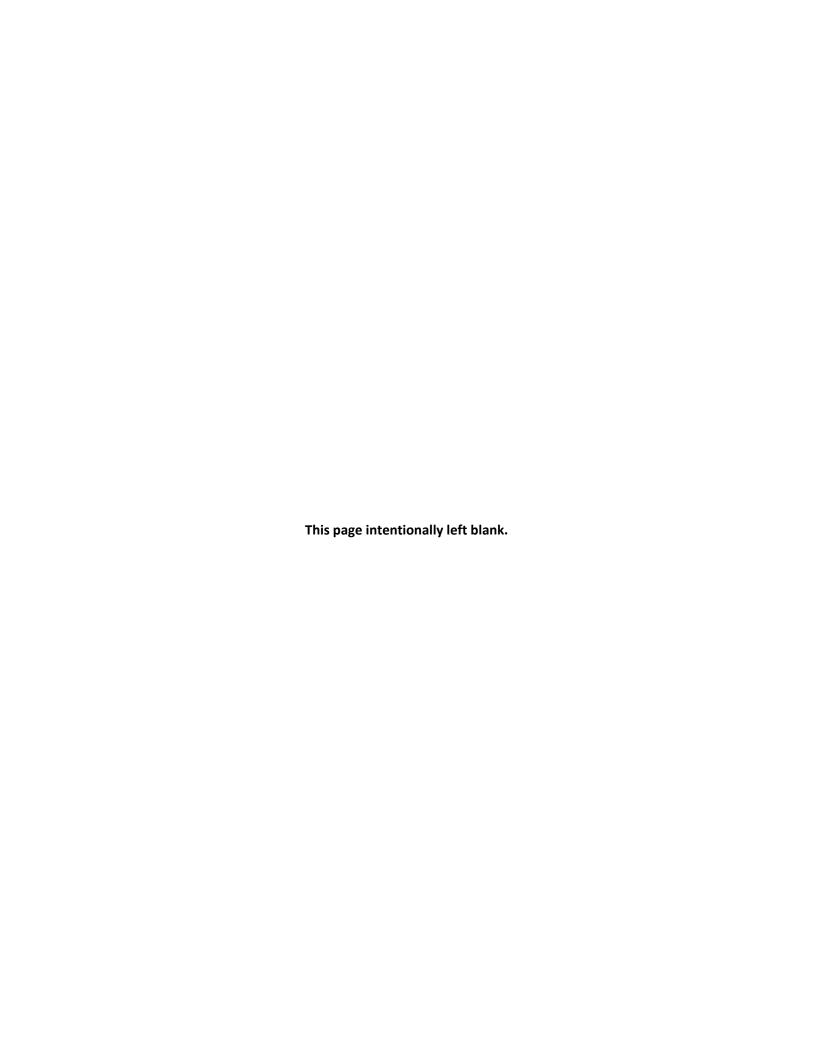
Christopher Liles, PE Senior Engineer

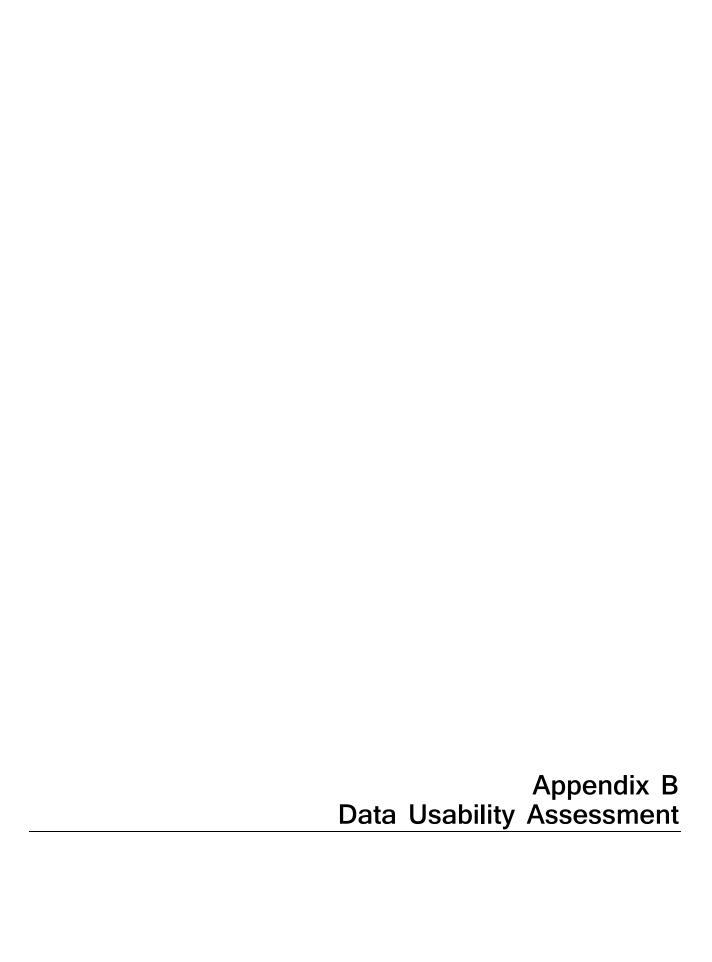
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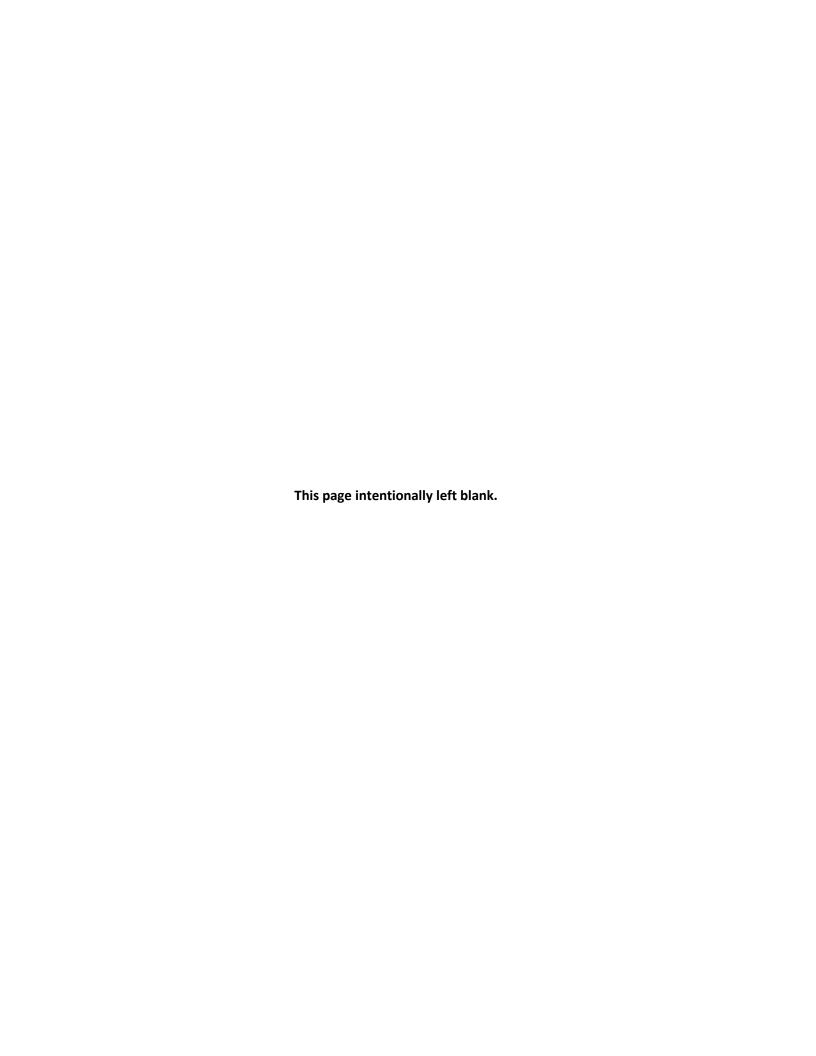
cc: Mr. Michael Bower, PE, The Boeing Company

Mr. Steve Reiners. MWH Global

Mr. Jon Freed, CH2M Hill







2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report Santa Susana Field Laboratory, Ventura County, California

National Aeronautics and Space Administration

November 2016

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Acronyms and Abbreviations

%D percent difference

2-CLEVE 2-chloroethylvinyl ether

CEL Eurofins Calscience Laboratory, Inc.

EMXT EMAX Laboratories

EPA U.S. Environmental Protection Agency

FD field duplicate

LANC Lancaster Laboratory

LCS laboratory control sample

LCSD laboratory control sample duplicate

MDL method detection limit
MRL method reporting limit

MS matrix spike

MSD matrix spike duplicate

NASA National Aeronautics and Space Administration

NDMA n-nitrosodimethylamine

PARCCS precision, accuracy, representativeness, completeness, comparability and sensitivity

QAPP quality assurance project plan RPD relative percent difference

SDG sample delivery group

SSFL Santa Susana Field Laboratory
SVOC semivolatile organic compound

TAML TestAmerica Laboratories

TB trip blank

TCE trichloroethene

TPH total petroleum hydrocarbons
VOC volatile organic compound

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SECTION 1

Introduction

The objective of this data usability assessment report is to assess the data quality of analytical results for groundwater samples collected during the Third Quarter 2016 Sitewide Groundwater Monitoring activities at the National Aeronautics and Space Administration (NASA) Santa Susana Field Laboratory (SSFL) in Ventura County, California. Samples were collected and analyzed to provide additional groundwater monitoring data. The data may also be used to support future activities such as feasibility studies, risk assessments, fate-and-transport modeling, and remedial actions.

Individual method requirements and guidelines from the *Groundwater Monitoring Quality Assurance Project Plan, Revision1* (GM-QAPP) (Haley & Aldrich, 2010), which is included in Appendix B of the *Site-Wide Water Quality Sampling and Analysis Plan*, were used in this assessment. The GM-QAPP includes the quality assurance/quality control procedures to confirm the quality of field and laboratory data and to evaluate that project work meets the data quality objectives for the intended use of the data for NASA SSFL groundwater monitoring program. This report is intended as a general data quality evaluation designed to summarize data issues and to provide an overall data usability assessment.

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SECTION 2

Analytical Data

This data usability assessment report covers 27 environmental groundwater samples, 2 groundwater field duplicate (FD) samples, and 11 trip blanks (TBs). These samples were reported under 30 sample delivery groups (SDGs) by the laboratories. Samples were collected between July 12 and August 12, 2016. Sixteen methods were used to analyze the environmental samples and are listed in Table B-1. The analyses were performed by Eurofins Calscience Laboratory in Garden Grove, California (CEL); EMAX Laboratories in Torrance, California (EMXT); Lancaster Laboratories in Lancaster, Pennsylvania (LANC); and TestAmerica Laboratories in St Louis, Missouri (TAML). Samples were collected and delivered by laboratory courier or overnight carrier to the laboratories. Selected samples were analyzed for one or more of the methods presented in Table B-1.

TABLE B-1

Analytical Parameters by Laboratory

2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County,
California

Parameter	Method	Laboratory
Ammonia	4500-NH3F	CEL; EMXT
NDMA	E1625C	CEL
Anions	E300.0	CEL; EMXT
Perchlorate	E314	CEL
Gross Alpha/Beta	E900	TAML
Gamma-emitting isotopes	E901.1	TAML
Strontium-90	E905.0	TAML
Tritium	E906.0	TAML
Isotopic Uranium	HASL 300 radioisotopes	TAML
ТРН	SW8015B	CEL; EMXT
VOCs	SW8260B	CEL; EMXT
1,4-Dioxane/1,2,3-Trichloropropane	SW8260B-SIM	CEL
Phthalates	SW8270C-SIM	CEL
Formaldehyde/Hydrazines	SW8315A	LANC
Explosives/Energetics	SW8330A	CEL
рН	SW9040C	CEL

CEL = Eurofins Calscience Laboratory

EMXT = EMAX Labs, Inc.

LANC = Lancaster Laboratories

NDMA = n-nitrosodimethylamine

TAML = TestAmerica Laboratories

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

The chains of custody and case narratives associated with each of the laboratory SDGs are included in the laboratory data summary reports provided in Attachment A to this report. The data validation summary reports associated with each of these SDGs are provided in Attachment B (both attachments are provided electronically).

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One hundred percent of the data was evaluated on an SDG-by-SDG basis by CH2M HILL chemists for data quality using Level V validation, as specified in the GM-QAPP (Haley & Aldrich, 2010). The data evaluation included a review of: (1) chain-of-custody documentation; (2) holding-time compliance; (3) required quality control samples at the specified frequencies; (4) flagging for analytical blanks; (5) laboratory control sample (LCS)/laboratory control sample duplicates (LCSD); (6) surrogate spike recoveries for organic analyses; (7) matrix spike (MS)/matrix spike duplicate (MSD) recoveries; and (8) other method-specific criteria as defined by the GM-QAPP.

Field samples were also reviewed to ascertain field compliance and data quality issues. This included a review of TBs and FDs.

Data flags were assigned according to the GM-QAPP. These flags, as well as the reason for each flag, are uploaded into the NASA electronic database and are included in the data validation summary reports (provided in Attachment B). Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes matrix and blank sample impacts. The data flags are those listed in the GM-QAPP (Haley & Aldrich, 2010) and are defined below:

- J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (estimated).
- R = Data are unusable. The sample results are rejected due to serious deficiencies in the ability to analyze the sample and to meet quality control criteria. The presence or absence of the analyte cannot be verified.
- U = Analyte was analyzed for but not detected above the reported sample quantitation limit, or this analyte was considered not detected due to laboratory or field blank contamination.
- UJ = Analyte was analyzed for but not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- N = Analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

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Findings

The overall summaries of the data validation findings are outlined in the following sections. Specific analyte results and samples that were qualified are discussed in the data validation summary reports (Attachment B).

3.1 Calibration

Level V validation, as defined in the GM-QAPP (Haley & Aldrich, 2010), does not include review of initial or continuing calibration information. The laboratories did not report any criteria exceedances in the case narrative.

3.2 Holding Times

Analytical holding times were evaluated against the criteria listed in Table B-III of the GM-QAPP (Haley & Aldrich, 2010). For methods requiring both sample preparation and analysis, the preparation/extraction holding time will be calculated from the time of sampling to the initiation of preparation/extraction. The analysis holding time will be calculated from the time of completion of preparation/extraction to the time of completion of the analysis, including any required dilutions, confirmation analysis, and reanalysis. For methods requiring analysis only, the holding time is calculated from the time of sampling to completion of the analysis, including any required dilutions, confirmation analysis, and reanalysis.

Holding times were generally met, with the exceptions listed in Table B-2.

TABLE B-2 **Holding Time Qualification Summary**2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

	Total Number of	Total Number of Sample	as Estim Nondete	f Results Flagged ated Detect or ct as a Result of ime Exceptions	Number of Results Flagged as Rejected as a Result of Holding Time Exceptions	Percentage of Qualified Results
Method		Results	J Flag	UJ Flag	R Flag	
SW8315A Formaldehyde/Hydrazines	16	40	0	12	0	30%

Data qualification flags were applied to the individual results as indicated above. Twelve nondetected results were qualified as estimated and flagged "UJ." Eight samples for hydrazines were derivatized 1 to 4 days past holding time due to downtime for instrument maintenance issues. Sample results that have been qualified as estimated due to holding time exceptions are usable for project decisions; however, data users should consider the impact to any result that is qualified as estimated because it may contain a bias and should be accounted for during the decision-making process.

3.3 Analytical Blanks

Analytical blanks are used to monitor each preparation and/or analytical batch for interference and/or contamination from glassware, reagents, and other potential contaminant sources within the laboratory. There are two types of analytical blanks: method blanks and calibration blanks. A method blank is an analyte-free matrix (laboratory reagent water for aqueous samples) to which all reagents are added in the same amount or proportions as are added to samples. It is processed through the entire sample

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preparation and analytical procedures along with the samples in the batch. At least one method blank is prepared for each analytical batch of 20 samples or fewer. A calibration blank consists of laboratory reagent water that is analyzed periodically throughout the analytical run for the methods for which they are required (for example, U.S. Environmental Protection Agency [EPA] Method SW6020 for metals analysis). At least one calibration blank is analyzed for every 10 samples analyzed within the analytical run.

Calibration blanks and method blanks were analyzed at the required frequency and were generally free of contamination that would affect the sample results, with the exceptions listed in Table B-3.

TABLE B-3 **Analytical Blank Qualification Summary**2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

	Total	Total Number of	Number of Results Flagged as Nondetect as a Result of Analytical Blank Contamination	Percentage	
Method	Number of Samples	Sample Results	U Flag	of Qualified Results	
SW8270C-SIM Phthalates	9	54	5	9%	

Data qualification flags were applied to the individual results as indicated above. Five associated detected sample concentrations were less than 5 times the blank concentrations (10 times for common lab contaminants) and were qualified as nondetect and flagged "U." Overall, the blank qualifications were considered to be acceptable; therefore, the data are usable.

3.4 Field Blanks

Field blanks (ambient source blanks) and equipment rinsate blanks are collected to monitor interference and/or contamination from potential sources associated with field collection activities. One ambient source blank is collected each time the source of field decontamination water is changed and site samples are being collected for laboratory analysis. The blank consists of either deionized or distilled water procured by the field sampling team and is submitted to the laboratory for analysis in containers equivalent to the sample containers use for field samples. One equipment rinsate blank is collected each day per type of sampling equipment being used onsite for which site samples are being collected for laboratory analysis. The equipment rinsate blank consists of the same source water used for the ambient source blank and is passed over the sampling equipment following all decontamination procedures.

Ambient source blanks and equipment rinsate blanks were not collected during this sampling event because samples were collected using either dedicated or disposable sampling equipment.

3.5 Trip Blanks

TBs are used to monitor for cross contamination of VOC samples during sample shipping and handling. One TB was placed in each sample cooler containing field samples for VOC analyses. TBs are supplied by the fixed laboratory doing the analysis. The TBs were submitted and analyzed for VOC analyses only.

The TBs were collected and analyzed at the required frequency and were generally free of contamination that would affect the sample results, with the exceptions listed in Table B-4.

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TABLE B-4

Trip Blank Qualification Summary

NASA 2016 Third Quarter Site-Wide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

	Total	Total Number of	Number of Results Flagged as Nondetect as a Result of Field Blank Contamination	Percentage
Method	Number of Samples	Sample Results	U Flag	of Qualified Results
SW8015B TPH	16	122	1	<1%

TPH = total petroleum hydrocarbons

Data qualification flags were applied to the individual results as indicated above. One associated detected sample concentration was less than 5 times the blank concentration (10 times for common lab contaminants) and was qualified as not detected and flagged "U." Overall, the blank qualification was considered to be acceptable; therefore, the data are usable.

3.6 Field Duplicates and Split Samples

An FD, or collocated sample, is an independent sample collected as close as possible to the original sample from the same source under identical conditions. FDs are to be collected in the field for 5 or more percent of the samples collected for analysis during each sampling event, by matrix and method, and are used to document sampling and analytical precision and representativeness. FDs were collected less than the required frequency during the Third Quarter 2016 Sitewide Groundwater Monitoring event, but the 5 percent FD frequency was met for each method when compared to the third quarter 2016 sampling activities that were performed at NASA SSFL as a whole. Precision is expressed in terms of the relative percent difference (RPD) between the native and FD sample results. The RPD criterion for FDs for waters is 35 percent. Qualification is performed on the native sample and associated FD results in accordance with the GM-QAPP (Haley & Aldrich, 2010). FDs were collected and analyzed, and all precision criteria were acceptable.

Split samples are independent samples, collected as close as possible to the original sample, from the same source under identical conditions. These samples are sent to a different offsite laboratory in order to check the performance of the primary offsite laboratory. Split samples are to be collected at least once a year. Precision is expressed in terms of the RPD between the native (original) and split sample result. As an initial evaluation, an RPD criterion of 50 percent for soils and soil vapor samples was used in assessing data usability for results greater than the reporting limit. The comparability of the data was evaluated and outliers compared to look for trends in the accuracy and precision of reporting the data so that a bias or error is not laboratory dependent. Split samples were not collected for this sampling event. A split sample was collected during the first quarter 2016 sampling activities.

3.7 Matrix Spike Samples

A sample matrix fortified with known quantities of specific compounds is called a "matrix spike." It is subjected to the same preparation and analytical procedures as the native sample. The results of MS/MSD analyses provide information about the possible influence of the matrix on either the accuracy or precision of the measurements. Samples used for MS/MSD analysis were either collected in the field for 5 percent of the samples collected for analysis during each sampling event, by matrix and method, or were reported by the laboratory as part of their analytical batch requirements. Qualification of sample results due to MS/MSD recovery or precision exceedances were done on a sample batch basis for inorganic methods and on the parent sample only for organic methods in accordance with the GM-QAPP (Haley & Aldrich, 2010). Accuracy and precision criteria are listed in Table B-IV of the GM-QAPP.

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Accuracy and precision limits were generally met, with the exceptions listed in Table B-5.

TABLE B-5

Matrix Spike/Matrix Spike Duplicate Qualification Summary

2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

	Number of Native/MS/MSD	Number of Associated Native Sample	Flagged Detect o a Resul Recov	er of Results as Estimated r Nondetect as t of MS/MSD very and/or on Exceptions	Number of Results Flagged as Rejected as a Result of MS/MSD Recovery Exceptions	Percentage of Qualified
Method	Pairs	Results	J Flag	UJ Flag	R Flag	Results
SW8260B VOCs	8	564	2	0	8	1%

MS = matrix spike

MSD = matrix spike duplicate

VOC = volatile organic compound

Data qualification flags were applied to the individual results as indicated above. Two detected results were qualified as estimated and flagged "J," and one nondetected result was qualified as estimated and flagged "UJ." Sample results that have been qualified as estimated due to accuracy or precision criteria are usable for project decisions; however, data users should consider the impact to any result that is qualified as estimated because it may contain a bias and should be accounted for during the decision-making process.

Eight nondetected results were rejected from project use and were flagged "R" (8 flagged results out of 2,557 total results; approximately 0.3 percent) for Method SW8260B. 2-Chloroethyl vinyl ether (2-CLEVE) was recovered less than 10 percent in eight MS samples, indicating a significant matrix effect was evident in recovering that analyte from the sample matrix. The data results will not be used during the decision-making process.

3.8 Post-digestion Spikes

A post-digestion spike is a portion of the sample digestate that is fortified with known quantities of compounds of interest. The post-digestion spike is used to measure either positive or negative interferences that may distort the accuracy of the reported values in the native sample. Accuracy of the analytes should be within 75 to 125 percent of the known concentration added. Post-digestion spikes are only evaluated for metals analyses.

3.9 Serial Dilutions

A 1-to-5 serial dilution is performed on a portion of the sample digestate and analyzed. The serial dilution is used to measure either positive or negative interferences that may distort the precision of the reported values in the native sample. Precision is expressed in terms of the percent difference (%D) between the original sample and the serial dilution results The %D criterion should be less than 10 percent if the concentration of the analyte in the original sample is greater than 50 times the method detection limit (MDL). Serial dilutions are only evaluated for metals analyses.

3.10 Surrogates

Surrogates are organic analytes that behave similarly as the analytes of interest, or have been chemically altered (that is, chemically deuterated), but are not expected to occur naturally in the samples. They are spiked into the standards, field samples, and laboratory quality control samples prior to sample preparation. The results of surrogate spikes provide additional information about the possible influence of

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the matrix on the accuracy of the measurements for organic analyses only. Accuracy and precision criteria are listed in Table B-IV of the GM-QAPP (Haley & Aldrich, 2010).

Accuracy limits were generally met, with the exceptions listed in Table B-6.

TABLE B-6

Surrogate Spike Qualification Summary

2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

			as Est Nonde Surr	of Results Flagged imated Detect or tect as a Result of ogate Recovery Exceptions	Number of Results Flagged as Rejected as a result of Surrogate Recovery Exceptions	
Method	Number of Samples	of Number of		UJ Flag	R Flag	Percentage of Qualified Results
SW8015B TPH	16	122	0	2	0	2%

TPH = total petroleum hydrocarbons

Data qualification flags were applied to the individual results as indicated above. Two nondetected results were qualified as estimated and flagged "UJ." Sample results that have been qualified as estimated due to accuracy or precision criteria are usable for project decisions; however, data users should consider the impact to any result that is qualified as estimated because it may contain a bias and should be accounted for during the decision-making process.

3.11 Laboratory Control Samples

LCSs are used to monitor method performance for a given analyte in each matrix. An LCS is an analyte-free matrix (laboratory reagent water for aqueous samples or Ottawa sand for soil samples) spiked with known amounts of analytes that come from a source different than that used for calibration standards. Target analytes specified in the GW-QAPP (Haley & Aldrich, 2010) will be spiked into the LCS. It is processed through the entire sample preparation and analytical procedures along with the samples in the batch. At least one LCS is prepared for each analytical batch of 20 samples or less. Accuracy and precision criteria are listed in Table B-IV of the GM-QAPP.

LCSs and LCSDs were analyzed at the required frequency. Accuracy and precision limits were generally met, with the exceptions listed in Table B-7.

TABLE B-7 **Laboratory Control Sample Qualification Summary**2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County, California

			Estimated Result	er of Results Flagged as d Detect or Nondetect as of LCS Recovery and/or recision Exceptions	Number of Results Flagged as Rejected as a Result of LCS Recovery Exceptions	Percentage of Qualified Results
Method	Number of Samples	Number of Results	J Flag	UJ Flag	R Flag	·
SW8260B VOCs	27	1,871	0	31	0	2%

LCS = laboratory control sample VOC = volatile organic compound

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Data qualification flags were applied to the individual results as indicated above. Thirty-one nondetected results were qualified as estimated and flagged "UJ." Sample results that have been qualified as estimated due to accuracy or precision criteria are usable for project decisions; however, data users should consider the impact to any result that is qualified as estimated because it may contain a bias and should be accounted for during the decision-making process.

3.12 Laboratory Duplicates

A laboratory duplicate is a separate sample aliquot that is subjected to the same preparation and analytical procedures as the native sample. Laboratory duplicates were analyzed to measure the precision of sample results reported as required by the analytical method. Precision is expressed in terms of the RPD between the native and laboratory duplicate sample results. The RPD criterion for laboratory duplicates is 20 percent.

Laboratory duplicates were analyzed at the required frequency and precision criteria were acceptable.

3.13 Tentatively Identified Compounds

Tentatively identified compounds were not evaluated for any samples reported at this site.

3.14 Other

All VOC samples were collected in hydrochloric-acid-preserved containers, which rapidly decomposes 2-CLEVE. Therefore, the presence or absence of this compound in the samples could not be verified, and 27 sample results for 2-CLEVE were rejected. However, 2-CLEVE is not considered an environmental driver for this project (that is, trichloroethene [TCE] and its daughter products are the primary environmental drivers for VOCs), so this does not significantly impact the overall data quality.

3.15 Chain of Custody

No discrepancies were noted. Chains of custody are provided in the laboratory data summary reports included in Attachment A.

3.16 Overall Assessment

The final activity in the data quality evaluation is an assessment of whether the data meet the data quality objectives. The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected, and the resulting analytical data can be used to support the decision-making process. The precision, accuracy, representativeness, completeness, comparability and sensitivity (PARCCS) are addressed in the GM-QAPP (Haley & Aldrich, 2010). The following summary highlights the data evaluation findings for the above-defined events:

- Precision of the data was verified through the review of the field and laboratory data quality indicators
 that include: FDs, LCS/LCSDs, MS/MSDs, serial dilution, and laboratory duplicate RPDs. Precision was
 generally acceptable, with the exception of several analytical results that were qualified as estimated
 due to FD, MS/MSD, or laboratory duplicate RPD issues. Overall, 1 result out of 2,557 total results (less
 than 0.1 percent) were qualified for precision exceptions.
- Accuracy of the data was verified through the review of the LCS, MS/MSD, post-spike, and surrogate standard recoveries, as well as the evaluation of the method blank/field blank data. Accuracy was generally acceptable, with the exception of some analytical results being qualified as estimated detected and nondetected results due to LCS, MS/MSD, and/or surrogate issues. Eight 2-CLEVE results were rejected due to low MS/MSD recoveries. Overall, 37 results out of 2,557 total results (approximately 1.4 percent) were qualified for accuracy exceptions. Analytical/field blank data were

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generally free of contamination, with some analytical results being qualified as nondetect. Overall, 7 results out of 2,557 total results (approximately 0.3 percent) were qualified for blank contamination exceptions.

- Representativeness of the data was verified through the sample's collection, storage, and the
 verification of holding-time compliance. No issues related to sample collection or storage of the
 samples were noted by the laboratories. Overall, 12 results out of 2,557 total results (approximately
 0.5 percent) were qualified for holding time exceptions. All other data were reported from analyses
 within the EPA-recommended holding times.
- Comparability of the data was verified through the use of standard EPA analytical procedures and standard units for reporting. Results obtained are comparable to industry standards in that the collection and analytical techniques followed approved, documented procedures.
- Sensitivity is a measurement based upon the analytical instrument method reporting limits (MRLs) determined by each subcontract laboratory. The analytical reporting limits were determined based upon the completion of instrument-specific MDL studies performed annually in accordance with the Title 40, Code of Federal Regulations, Part 136, Appendix B (EPA, 1984). The MRLs are generally established by multiplying the MDL by a factor of 3 to 5 as recommended by generally accepted laboratory practice and is further supported by the lowest-level analytical standard in the initial calibration process. Sensitivity is ensured through compliance with the MRLs specified in the GM-QAPP (Haley & Aldrich, 2010). Any nondetect results that were reported by the laboratory, or were flagged nondetect due to blank contamination, have been evaluated against the project screening levels as discussed in the work plan.
- Completeness is a measure of the number of valid measurements obtained in relation to the total number of measurements planned. Completeness is expressed as the percentage of valid or usable measurements compared to planned measurements. Valid data are defined as data that are not rejected for project use. The completeness goal of 90 percent was met for all analyte/methods, as indicated in Table B-8, with the exception of 2-CLEVE. Adequate data could not be obtained for this compound.

Evaluation of 100 percent of the chemical data was performed by using the GM-QAPP (Haley & Aldrich, 2010) as a guide for data quality evaluation. The overall completeness was met and with the exception of the improperly preserved sample containers for 2-CLEVE, no other systematic protocol errors were identified during the monitoring of the field or laboratory efforts. This along with the PARCCS evaluation demonstrate that the overall quality of the analytical program and laboratory are sufficient to meet the project data quality objectives.

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TABLE B-8

Site Completeness Summary

2016 Third Quarter Sitewide Groundwater Monitoring Data Usability Assessment Report, SSFL, Ventura County,
California

	Total Number of	Total Number of	Numbe Qualifi Results Nondet	ied s as	Numbe Qualif Result Estima	ied s as	Numbe Qualifi Results Rejecte	ed as	Perce Complet	
Method	Samples ^a	Results	Number	%	Number	%	Number	%	Number	% ^e
4500-NH3F Ammonia	17	17	0	0.0	0	0.0	0	0.0	17	100.0
E1625C NDMA	22	22	0	0.0	0	0.0	0	0.0	22	100.0
E300.0 Anions	18	49	0	0.0	0	0.0	0	0.0	49	100.0
E314 Perchlorate	16	16	0	0.0	0	0.0	0	0.0	16	100.0
E900 Gross Alpha/Beta	2	8	0	0.0	0	0.0	0	0.0	8	100.0
E901.1 Gamma-emitting isotopes	2	84	0	0.0	0	0.0	0	0.0	84	100.0
E905.0 Strontium-90	2	2	0	0.0	0	0.0	0	0.0	2	100.0
E906.0 Tritium	2	2	0	0.0	0	0.0	0	0.0	2	100.0
HASL 300 Isotopic Uranium	2	6	0	0.0	0	0.0	0	0.0	6	100.0
SW8015B TPH	16	122	2	1.6	2	1.6	0	0.0	122	100.0
SW8260B VOCs	27	1,871	0	0.0	24	1.3	27	1.4	1,844	98.6
SW8260B-SIM 1,4-Dioxane/ 1,2,3-Trichloropropane	28	33	0	0.0	0	0.0	0	0.0	33	100.0
SW8270C-SIM Phthalates	9	54	5	9.3	0	0.0	0	0.0	54	100.0
SW8315A Formaldehyde/Hydrazines	16	40	0	0.0	12	30.0	0	0.0	40	100.0
SW8330A Explosives/Energetics	16	224	0	0.0	0	0.0	0	0.0	224	100.0
SW9040C pH	7	7	0	0.0	0	0.0	0	0.0	7	100.0

^a Includes field duplicate and normal samples.

NDMA = n-nitrosodimethylamine

TPH = total petroleum hydrocarbons

VOC = volatile organic compound

3-8 EN1019161108MGM

^b Results flagged U.

^c Results flagged J or UJ.

^d Results flagged R.

e % Complete = (reported results-unusable results]/reported results)*100.

SECTION 4

References

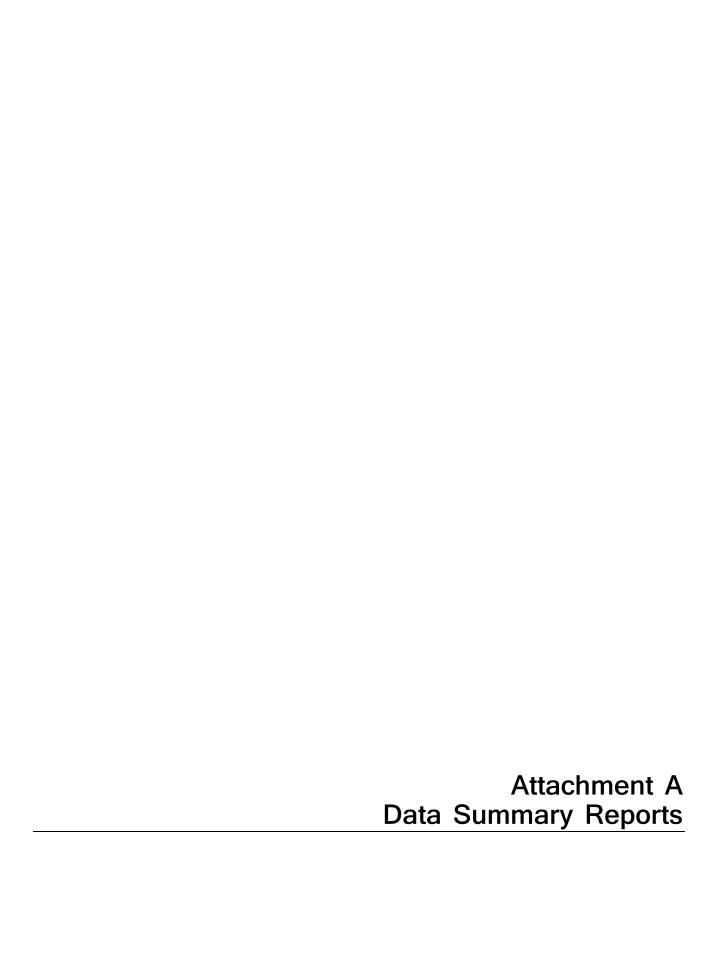
U.S. Environmental Protection Agency (EPA). 1984. *Guidelines Establishing Test Procedures for the Analysis of Pollutants*. Title 40, *Code of Federal Regulations*, Part 136, Appendix B. Washington, D.C.: Government Printing Office. March.

Haley & Aldrich, Inc. (Haley & Aldrich). 2010. Groundwater Monitoring Quality Assurance Project Plan, SSFL Ventura County, California, Revision 1. December.

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4-2 EN1019161108MGM



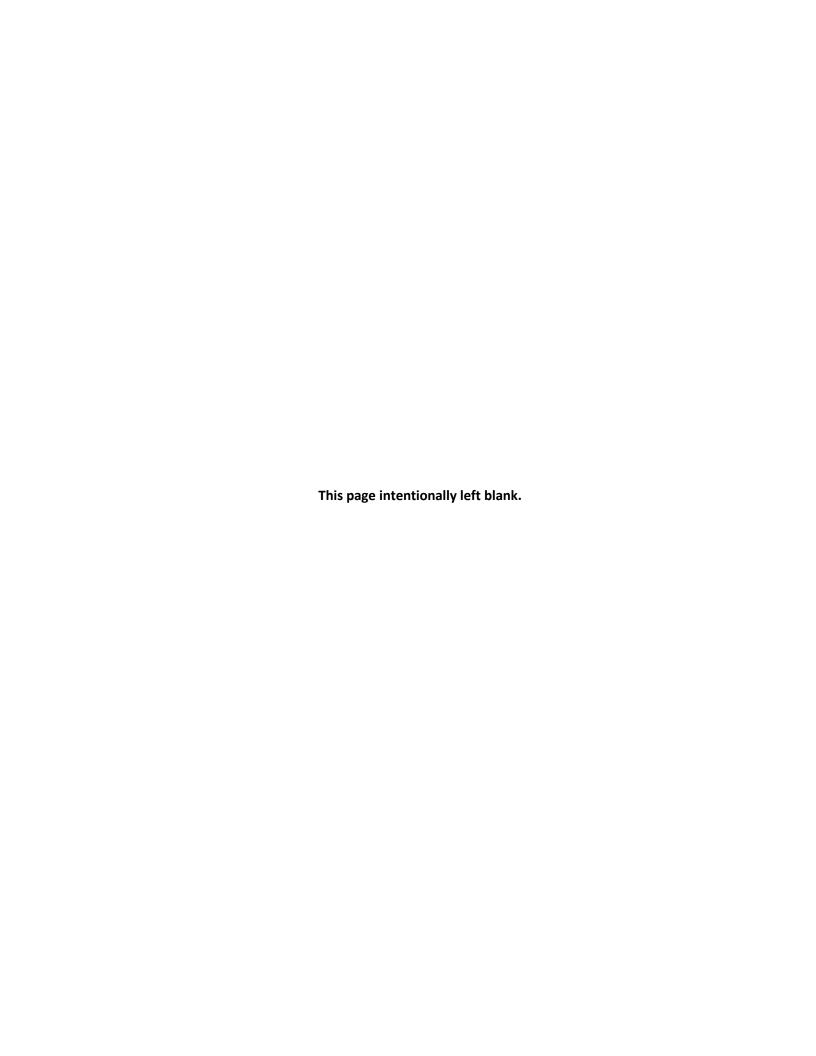


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CLIENT:

CH2M HILL

PROJECT:

SSFL 3Q 2016 GW

SDG:

16G302

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WET	METHOD 300.0 METHOD SM2320B METHOD SM2540C METHOD SM4500-NH3F METHOD 9040C	8000 - 8103 8104 - 8116 8117 - 8122 8123 - 8132 8133 - 8137
OTHERS	**	9000 —

^{** -} Not Requested





Torrance, CA 90501 Tel: (310) 618-8889 Fax: (310) 618-0818

Date: 08-24-2016 EMAX Batch No.: 16G302

Attn: Mark Fesler

CH2M Hill 2525 Airpark Drive Redding, CA 96001

Subject: Laboratory Report

Project: SSFL 3Q 2016 GW

Enclosed is the Laboratory report for samples received on 07/27/16. The data reported relate only to samples listed below:

Sample ID	Control #	Col Date	Matrix	Analysis
CAQW2459Q001	G302-01	07/26/16	WATER	VOLATILES + APP 9 TPH GASOLINE
HAR19GW01S016	G302-02	07/26/16	WATER	VOLATILES + APP 9 AMMONIA-N BY SM4500-NH3 F TPH TPH GASOLINE ANIONS BY IC ALKALINITY TOTAL DISSOLVED SOLIDS DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS DISSOLVED METALS BY ICP-MS
ND135GW01D011	G302~03	07/26/16	WATER	PH VOLATILES + APP 9 AMMONIA-N BY SM4500-NH3 F TPH

TPH GASOLINE ANIONS BY IC ALKALINITY

Sample ID	Control #	Col Date	Matrix	Analysis
				TOTAL DISSOLVED SOLIDS DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS DISSOLVED METALS BY ICP-MS PH
ND135GW01S011	G302-04	07/26/16	WATER	VOLATILES + APP 9 AMMONIA-N BY SM4500-NH3 F TPH TPH GASOLINE ANIONS BY IC ALKALINITY TOTAL DISSOLVED SOLIDS DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS DISSOLVED METALS BY ICP-MS PH
HAR19GW01S016MS	G302-02M	07/26/16	WATER	VOLATILES + APP 9 AMMONIA-N BY SM4500-NH3 F TPH TPH GASOLINE ANIONS BY IC DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS DISSOLVED METALS BY ICP-MS
HAR19GW01S016MSD	G302-02\$	07/26/16	WATER	VOLATILES + APP 9 TPH TPH GASOLINE DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS DISSOLVED METALS BY ICP-MS
HAR19GW01S016DUP	G302-02D	07/26/16	WATER	AMMONIA-N BY SM4500-NH3 F ANIONS BY IC ALKALINITY TOTAL DISSOLVED SOLIDS
ND135GW01S011MS	G302-04M	07/26/16	WATER	VOLATILES + APP 9 AMMONIA-N BY SM4500-NH3 F TPH TPH GASOLINE ANIONS BY IC DISSOLVED MERCURY SEMIVOLATILE ORGANICS BY GCMS

Sample ID	Control #	Col Date	Matrix	Analysis
				SSO NAT DE SAT AND NAT NAT AND
				DISSOLVED METALS BY ICP-MS
ND135GW01s011MSD	G302-04S	07/26/16	WATER	VOLATILES + APP 9
				TPH
				TPH GASOLINE
		•		DISSOLVED MERCURY
				SEMIVOLATILE ORGANICS BY GCMS
				DISSOLVED METALS BY ICP-MS
ND135GW01S011DUP	G302-04D	07/26/16	WATER	AMMONIA-N BY SM4500-NH3 F
				ANIONS BY IC
				ALKALINITY
				TOTAL DISSOLVED SOLIDS

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely your

Caspar J. Pang Laboratory Director

This report is confidential and intended solely for the use of the individual or entity to whom it is addressed. This report shall not be reproduced except in full or without the written approval of EMAX.

EMAX certifies that results included in this report meets all NELAC & DOD requirements unless noted in the Case Narrative.

NELAP Accredited Certificate Number E871112 L-A-B Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing California ELAP Accredited Certificate Number 2672

Chain of Custody Record	COC Number: EMAX07261601	CHZMHILL	CH2NHLL 7/26/2016 1:07:41 PM F	Page 1 of 8
Project Name SSFL Task Order 505 Project: 3 Project Number 476119.01.02	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS			
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084			
Turnaround Time 10 Days PO Number 955656		14500NF SM254 A232 741 300	SW90 SW820 SW820 SW8015 SW801	
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	10C 20B 70A	70C 50B 5-P L5B	
CAQW2459Q001	26-Jul-16 7:10 N Water			
VOCs full list	Field Filtered: 3 HCL pH<24C			
Report Carbon Ranges	Field Filtered: 3 HCL pH<24C		 	
	Total Containers: 6			

Cooler#1 7=3.4°C
Cooler#2 7=2.1°C
Cooler#3 7=2.0°C
Cooler#4 7=1.0°C
Cooler#5 7=1.7°C

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Received by	16	1/21/16 0850	Airbill No:	and	Report Conv to
Relinquished by			Lab Name: EMAX Laboratories	Ye Myint	Jon Freed
Received by			Lab Phone: (310) 618-8889		(208) 660-4929
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COC Number: **EMAX07261601**

Chain of Custody Record

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Project Name SSFL Location Santa Sur Task Order 505 Project: 3Q2016 SA/PCP & AIG C Project Number 476119.01.02 Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5 Turnaround Time 10 Days PO Number 955656 Sample ID Sample Date/Time Task Order Sample Date/Time Task Order Date/Time	usana Field Lab GWS -5084 Type Matrix # Containers	ainers Preserv	7470A 300.0	A2320B	SM4500NH3F SM2540C	SW6010F/6020	SW8015B	SW8260B SW8015-P	SW8270C	SW9040		
HAR19GW01S016 26-Jul-16 11:00	N Water											
Alkalinity, Bicarbonate	Field Filtered:	1 4'C		>								
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Field Filtered:	1 HNO3, 4'C				>						
SO4, CI, NO2, NO3, F	Field Filtered:	I 4'C	>									
Ammonia	Field Filtered:	1 H2SO4, pH<2, 4'C			<u>S</u>							
Mercury	Field Filtered:	I HNO3, 4'C	>									
Нd	Field Filtered:	1 4'C								<u> </u>		
SVOCs plus phthalates	Field Filtered:	2 4'C						H	>			
TDS	Field Filtered:	1 4'C			3							
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C					<u>S</u>					
VOGs full list	Field Filtered:	3 HCL pH<2 4C						<u>></u>				
Report Carbon Ranges	Field Filtered:	3 HCL pH<2 4C						S				
	Total Containers:	17 17										
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Received by	J. B.S.	A 5780 3 127 6	Airbill No:	and	04 X 00 0 1 1 0 0 0 0
Relinquished by			Lab Name: EMAX Laboratories	Ye Myint	Jon Freed
Received by			Lab Phone: (310) 618-8889		(208) 660-4929
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Page 3 of 8

7/26/2016 1:07:42 PM

Chain of Custody Record

SW9040 SW8270C > SW8260B > SW8015-P > SW8015B > SW6010F/6020 > SM4500NH3F > SM2540C > > A2320B 7470A > 300.0 > H2SO4, pH<2, 4'C Sample Date/Time Type Matrix # Containers Preserv HCL pH<24C HCL pH<2 4C HN03, 4'C HN03, 4'C 16 4'C 4'C 4'C 4°C Total Containers: က က 2 2 COC Number: **EMAX07261601** Field Filtered: Location Santa Susana Field Lab MS Water Project: 3Q2016 SA/PCP & AIG GWS (530) 570-5084 11:00 26-Jul-16 Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B Report Carbon Ranges incl. EFH C8-C30 Total Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days Project Number 476119.01.02 (\mathcal{L}) HAR19GW01S016MS PO Number 955656 Project Name SSFL 505 SVOCs plus phthalates Alkalinity, Bicarbonate SO4, CI, NO2, NO3, F Report Carbon Ranges Task Order VOCs full list Sample ID Ammonia Mercury TDS

MS = Matrix Spike	SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mysty Cley	7/26/16 1600	7/36/16 1000 Mother of Chimmont	ATTN:	CH582 PO: 100067101891
sampled by	May Oles				CH614 PO 100067103941
Relinguished by	Muts Cin	>	On Ice: yes / no	Sample Custody	
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Relinquished by	1, 000	2)]	Lab Name: EMAX Laboratories	Ye Myint	Report Copy to
Received by			Lab Phone: (310) 618-8889	<u> </u>	(208) 660-4929
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Chain of Custody Record COC Number:	. EMAX07261601	The state of the s		7/26/201	7/26/2016 1:07:42 PM	W Page 4 of 8		100000000000000000000000000000000000000
Project Name SSFL Location Santa Susana Field Lab Task Order 505 Project: 3Q2016 SA/PCP & AIG GWS Project Number 476119.01.02	ısana Field Lab GWS							
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	5084		SF					
Turnaround Time 10 Days PO Number 955656			M254 A232 747 300	SW801	SW827 SW826 SW8015	SW90		
Sample ID Sample Date/Time	Type Matrix # Containers	ainers Preserv	0C 0B 0A	20	0B	40		
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Alkalinity, Bicarbonate	Field Filtered:	4'C	S					tm
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Field Filtered:	HNO3, 4'C		>		000000000000000000000000000000000000000		
SO4, CI, NO2, NO3, F	Field Filtered:	4'C	 					11-
Ammonia	Field Filtered:	H2SO4, pH<2, 4'C						ltn
Mercury	Field Filtered: 1	HNO3, 4'C	<u> </u>					II
SVOCs plus phthalates	Field Filtered:	2 4'C						lm
TDS	Field Filtered:	4°C	>					t-
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C		>				lim
VOCs full list	Field Filtered:	3 HCL pH<24C			>			
Report Carbon Ranges	Field Filtered:	3 HCL pH<24C			<u> </u>			
	Total Containers:	ners: 16			-			
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Relinquished by	2000		Lab Name: EMAX Laboratories	Ye Myint	Jon Freed
Received by		The second secon	Lab Phone: (310) 618-8889		(208) 660-4929
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Location Santa Su: 3Q2016 SA/PCP & AIG	ısana Field Lab GWS												
Project Manager Jeremy Filliard Sample Manager Jamie Beckett (530) 570-50	5084				SM	SW60							
Turnaround Time 10 Days PO Number 955656			300	A232	14500NH	SW801:	SW8015-	SW827	SW90				
Sample ID Sample Date/Time T	Type Matrix # Containers	ners Preserv					-P						
ND135GW01D011 26-Jul-16 9:00	N Water												1
Alkalinity, Bicarbonate	Field Filtered: 1	4'C		>									tm
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Field Filtered:	HN03, 4'C				S							
SO4, CI, NO2, NO3, F	Field Filtered: 1	4'C	3										lm
Аттолія	Field Filtered: 1	H2SO4, pH<2, 4'C			>								
Mercury	Field Filtered: 1	HNO3, 4'C	S										
Hd	Field Filtered: 1	4'C							3				
SVOCs plus phthalates	Field Filtered: 2	4'C						>					
TDS	Field Filtered:	4'C		S				H					lm
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4.C				<u>></u>							
VOCs full list	Field Filtered: 3	HCL pH<24C						5					
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Relinquished by			Lab Name: EMAX Laboratories	Ye Myint	Jon Freed
Received by			Lab Phone: (310) 618-8889		(208) 660-4929
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Chain of Custody Record COC Number:	ber: EMAX07261601		CH2MHIL.	7/26/2016	7/26/2016 1:07:42 PM	Page 6 of 8
Location Santa t: 3Q2016 SA/PCP & Al	Susana Field Lab IG GWS					
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 57	70-5084		SM			
Turnaround Time 10 Days PO Number 955656			M2540 A2320 7470 300	SW801	SW827	SW90:
Sample ID Sample Date/Time	e Type Matrix # Containers	ainers Preserv	OC OB OA	20	0C 0B	4.0
) ND135GW01S011 26-Jul-16 9:00	00 N Water					
Alkalinity, Bicarbonate	Field Filtered:	1 4'6	S			
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Field Filtered:	1 HNO3, 4'C		<u> </u>		
SO4, Cl, NO2, NO3, F	Field Filtered:	1 4'C				
Аmmonia	Field Filtered:	1 H2SO4, pH<2, 4'C				
Mercury	Field Filtered:	1 HNO3, 4'C	<u> </u>			
Hd	Field Filtered:	1 4'C				
SVOCs plus phthalates	Field Filtered:	2 4'C			>	
TDS	Field Filtered:	1 4'C	> -			
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C		5		
VOCs full list	Field Filtered:	3 HCL pH<24C			[]	
Report Carbon Ranges	Field Filtered:	3 HCL pH<24C				
	Total Containers:	ners: 17			770	

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Chain of Custody Record COC Number:	er: EMAX07261601	U	CHZMHIL		7/26/2016 1:07:42 PM	16 1.1	7.42	Wa	Page	Page 7 of 8	8		
Project Name SSFL Location Santa Susana Field Lab Task Order 505 Project: 3Q2016 SA/PCP & AIG GWS Project Number 476119.01.02	ta Susana Field Lab AIG GWS												
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	-5084			SM	SW60						······································		
Turnaround Time 10 Days PO Number 955656			A232 747 300	14500NH	SW801 010F/60	SW8015	SW826	SW90				 	
Sample ID Sample Date/Time	Type Matrix # Containers	iners Preserv	0B 0A									 	
ND135GW01S011MS 26-Jul-16 9:00	MS Water						-						
Alkalinity, Bicarbonate	Field Filtered:	4'C	S									H	
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Field Filtered:	HN03, 4'C			>								
SO4, CI, NO2, NO3, F	Field Filtered:	4'C	<u> </u>										
Ammonia	Field Filtered:	H2SO4, pH<2, 4'C		>									
Mercury	Field Filtered:	HNO3, 4'C	<u> </u>										
SVOCs plus phthalates	Field Filtered: 2	4'C						2					
TDS	Field Filtered:	4.C											
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C			<u>S</u>								
VOCs full list	Field Filtered: 3	HCL pH<2 4C					2						
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C				>						H	
	Total Containers:	ers: 16								онтосив			

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Received by		1 NO 11/COLC	Airbill No:	and	-
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Received by			Lab Phone: (310) 618-8889		(208) 660-4929
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Chain of Custody Record	ord COC Number:	r: EMAX07261601	7			Ī		1/25/2010 1:01:42 FIM	2	4. 10	À	- ag	raye o ui o		
Project Name SSFL Task Order 505 Project: (Project Number 476119.01.02	Location Santa Susana Project: 3Q2016 SA/PCP & AIG GWS 01.02	Susana Field Lab													
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	-079 (530)	570-5084					SI	SW60							
Turnaround Time 10 Days PO Number 955656					747 300	SM254 A232	14500NH	010F/60	SW8015	SW826	SW90				
Sample ID	Sample Date/Time	Type Matrix #Co	# Containers Pre	Preserv						0B					
14) ND135GW01S011SD	26-Jul-16 9:00	SD Water						<u> </u>							
Alkalinity, Bicarbonate		Field Filtered:	1 4'C			3									
Title 22 + Ca, Fe, Mg, Mn, K, Na, Sr, Zn, Ba, B	Ba, B	Field Filtered:	1 HNO3, 4'C	4'C				>			H				
SO4, CI, NO2, NO3, F		Field Filtered:	1 4'C		<u>></u>										
Ammonia		Field Filtered:	1 H2SO4, pH<2, 4'C	<2, 4'C			2				H				
Mercury		Field Filtered:	1 HNO3, 4'C	4'C	>										
SVOCs plus phthalates		Field Filtered:	2 4'C								<u> </u>				
TDS		Field Filtered:	1 4'C			<u>></u>									
Report Carbon Ranges incl. EFH C8-C30 Total) Total	Field Filtered:	2 4'C						2						
VOCs full list		Field Filtered:	3 HCL pH<24C	2.4C						3					
Report Carbon Ranges		Field Filtered:	3 HCL pH<24C	2.4C					<u>></u>						
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□ EMAX Couner □ Chem Den	ivery (9)	<u>-77174 D-</u>	8 47 4	1 Date 7 6 11 116	11meO 0 2 0
COC INSPECTION				724/2	
Client Name	Chient PM/FC	Sampler Name	Sampling Date/Time	☐ Sample 1D	Matrix
■ Address	Tel#/Fax#	☐ Courier Signatur	* *	Preservative (if any)	TAT
Safety Issues (if any)	☐ High concentrations expe	cted 🗆 From Superfund	Site	l	
Note:					
				-	
PACKAGING INSPECTIO	N				
Container	Brooles (5)	□Вох	□ Other		
Condition	Custody Seal	□ Int act	☐ Damaged		
Packaging	Deubble Pack	□ Styrofoam	□ Popcom	■ Sufficient	EPHSTICBASS
		Cooler 2 2.2°C	⊟ -Cooler 3 2 . 0 °C	-ECooler 4 1.0 °C	Cooler 5 1, 7 °C
Temperatures (Cool, 56 °C but not frozen)	□ Cooler 6 °C	Cooler Z C		To 1 0: 90	P 0 1 10 90
Thermometer:	A - S/N 130 53 8 5 05	R - S/N 140252	© Cooler 8"C -070 C3s/N_140252067	D - S/N /175536	37 - 11.
Comments: D Temperature is or			1,0232007	253/11 /40 252	m 2/3/16
	ot of range. Pivi was intormed	U HYHYLEDIA I ELI.			
Note:					
DISCREPANCIES		*			
LabSampleID	LabSampleContainerID	Code ClientSam	ple Label ID / Information	Corrective	Action
4	77717981	DIY		P-A	
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	- Succession		47/27/16	L.	Management of the State of the
□ nH holding time requiremen	t for water samples is 15 min	ns. Water samples for pH	Tanaiysis are received beyond I	5 minutes from sampling time.	. 4104111
					4 42416
NOTES/OBSERVATIONS:	must of the	VIALA HELLY	W/ Swall Bu	agus	manager (results) had it freed purply dashed at a objected freezen and distinct and the following increasing the consequences are
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				And the second s	and works are a success or more thanks to be a successful and the succ
LEGEND:	The second secon			☐ Continue to next pa	ige.
Code Description- Sample Man	agement :	Code Description-Sample	Management	Code Description-Sample Man	agement
D1 Analysis is not indicated in	9	D13 Out of Holding Time	-	R1 Proceed as indicated in D CC	DC 🗆 Label
D2 Analysis mismatch COC vs		, D14 Bubble is >6mm		R2 Refer to attached instruction	
D3 Sample ID mismatch COC		D15 No trip blank in cook	er	R3 Cancel the analysis	
· ·		D16 Preservation not indic		R4 Use vial with smallest bubble	e first
		D17 Preservation mismate		R5 Log-in with latest sampling date and time+1 min	
		D17 Preservation inismate D18 Insufficient chemical		R6 Adjust pH as necessary	
			propervative	R6 Adjust pH as necessary R7 Filter and preserved as necessary	
D7. Date/Time mismatch COC		D19 Insufficient Sample	discaland suctions	R7 Filter and preserved as necessary R8	
D8 Sample listed in COC is not		D20 No filtration info for	·		
D9 Sample received is not liste		D21 No sample for moisture		R9 .	
D10 No initial/date on correction		D22		- R10	
D11 Container count mismatch (D23		R11	and the state of t
D12 Container size mismatch Co	OC vs received	D24		R12	
REVIEWS:	ene VI	1/ -	(/01.		- 1 - Parcel
Sample Labeling	Tokan Man	ife	SRF CCCC	PM	THE STATE OF THE S
Date	7/27/16/3W7	11/6	Date +B+16	Dat	°7/24/16
	-1 -1	12	1 '		, ,

SHIP DATE: 26,JUL16 ACTWGT: 40,00 LB CAD: 104051289WSXI2500 DIMS: 24x14x16 IN

(334) 215-9078

ORIGIN ID:MGMA (334) 215-9078
MITCHELL CLINE
CH2MHILL INC
4121 CARMICHAEL ROAD, SUITE 400

BILL SENDER

TO YE MYINT EMAX LABORATORIES, INC

MONTGOMERY, AL 36106 UNITED STATES US

1835 W 205TH ST

REF: 654377.82.FW TORRANCE CA 90501 (310) 618-8889 INC: PO:



XH HHRA

90501 LAXCA-US

WED - 27 JUL 10:30A PRIORITY OVERNIGHT



24471/2CBD/14E8



(334) 215-9078 ORIGIN ID:MGMA (334) 215-9078 MITCHELL CLINE CH2MHILL INC 4121 CARMICHAEL ROAD, SUITE 400

MONTGOMERY, AL 36106 UNITED STATES US

BILL SENDER

TORRANCE CA 90501 (310) 618-8889 INV: PO: ____

EMAX LABORATORIES, INC

TO YE MYINT

1835 W 205TH ST

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(334) 215-9078 ORIGIN ID:MGMA (334) 215-9078 MITCHELL CLINE CH2MHILL INC 4121 CARMICHAEL ROAD, SUITE 400

SHIP DATE: 26JUL16 ACTWGT: 40.00 LB CAD: 104051289/MSXI2500 DIMS: 24x14x16 IN

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MONTGOMERY, AL 36106 UNITED STATES US

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(334) 215-9078 ORIGIN ID:MGMA (334) 215-9078
MITCHEL CLINE
CHEMHILL INC
4121 CARMICHAEL ROAD, SUITE 400 MONTGOMERY, AL 36106 UNITED STATES US

SHIP DATE: 26JUL16 ACTWGT- 40.00 LB CAD: 104051289/WSXI2500 DIMS: 24x14x16 IN

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EMAX LABORATORIES, INC

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ORIGIN ID:MGMA (334) 215-9078 MITCHELL CLINE CH2MHILL INC 4121 CARMICHAEL ROAD, SUITE 400

MONTGOMERY, AL 36106 UNITED STATES US

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REF: 654377.82.FW TORRANCE CA 90501



WED - 27 JUL 10:30A PRIORITY OVERNIGHT TRK# 7836 7332 8454

90501 LAX CA-US



REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
В	В	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range or estimated value.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.





WORK ORDER NUMBER: 16-07-0773

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/22/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB
Work Order Number:	16-07-0773

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2	Sample Summary	4
3	Client Sample Data. 3.1 RSK-175M Carbon Dioxide (Aqueous). 3.2 RSK-175M Dissolved Gases (Aqueous). 3.3 EPA 300.0 Anions (Aqueous). 3.4 SM 2320B Alkalinity (Aqueous). 3.5 SM 2510 B Specific Conductance (Aqueous).	5 5 6 7 9
	3.6 SM 2540 C Total Dissolved Solids (Aqueous). 3.7 SM 3500-FeB Ferrous Iron (Aqueous). 3.8 SM 4500 S2 - D Sulfide (Aqueous). 3.9 SM 5310 B Total Organic Carbon (Aqueous). 3.10 EPA 8015B (M) C8-C40 (Aqueous).	11 12 13 14 15
	3.11 EPA 8015B (M) TPH Gasoline (Aqueous). 3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous). 3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous). 3.14 EPA 1625C (M) NDMA (Aqueous). 3.15 EPA 504.1 EDB and DBCP (Aqueous). 3.16 EPA 8260B Volatile Organics (Aqueous). 3.17 EPA 8260B SIM Emergent Volatiles (Aqueous).	17 18 20 22 23 24 36
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 Sample Duplicate. 4.4 LCS/LCSD.	37 37 46 47 53
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6	Glossary of Terms and Qualifiers	73
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Work Order Narrative

Work Order: 16-07-0773 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/13/16. They were assigned to Work Order 16-07-0773.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-0773

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/13/16 10:00

Received:

Number of 63

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2442Q001	16-07-0773-1	07/12/16 07:00	1	Aqueous
HAR20GW01S006	16-07-0773-2	07/12/16 09:15	31	Aqueous
RD49AGW01S005	16-07-0773-3	07/12/16 12:30	31	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-0773				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 9	1
EPA 300.0	N/A	969	IC 10	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	682	GC 46	1
EPA 8015B (M)	EPA 5030C	933	GC 56	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-0773 Page 1 of 1

Qualifiers	Definition
<u>Quaimers</u> *	See applicable analysis comment.
_	Less than the indicated value.
<	
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

% Recovery and/or RPD out-of-range.

The sample extract was subjected to Silica Gel treatment prior to analysis.

Χ

SG

Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

> Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

> Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Project Name SSFL Task Order 582 Project: 3C Project Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 7.82.LB	16-07-0773	
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	SW60 SW60 SW	
Turnaround Time 10 Days PO Number 100067101891		SW90 0BSIM- SW826 SW8015 SW801 10F/60 SW601 10B/60 1625M- 500-Fe SM254 RSK17 RSK1 E376 A232 504	S W 90
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	LL 0B -P 5B 20 0F 20 LL -D 0C 5M 75 .2 0B .1 .0	60
CAQW2442Q001	12-Jul-16 7:00 N Water		
1,4-Dioxane LL	Field Filtered: ☐ 3 HCL pH<24C		
VOCs full list	Field Filtered: ☐ 3 HCL pH<2 4C		
Report Carbon Ranges	Field Filtered: 3 HCL pH<24C		
	Total Containers: 9		

CH2MHILL 7/12/2016 12:23:41 PM Page 1 of 5

COC Number: CALS07121601

Chain of Custody Record

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	įe į			
The state of the s	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mary Ch	00SI 31/C1/L	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Meth Cler	-	ļ		CH614 PO 100067103941
Relinquished by	Motor Cer	<u>ئ</u> ج	On ice: yes / no	Sample Custody	
Received by	12 11 W	F/12/16 1000 Airbill No:	Airbill No:	and	Report Conv. to
Relinquished by		and the same of th	Lab Name: CalScience	Michele Castro	Jon Freed
Received by	A STATE OF THE PARTY OF THE PAR		Lab Phone: (949) 870-8766		(208) 660-4929
•		WARRANT OF THE PARTY OF THE PAR			-



Chain of Custody Record	COC Number: (CALS07121601	601		CH2MHILL	1		_	2/2016	3 12:2	7/12/2016 12:23:42 PM		Page	2 of	2		9	4	73	
Project Name SSFL Task Order 582 Project: 3Q20 Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB ny Hilliard	na Field Lab								Si			sw			SW8		}	1	\
Sample Manager Jamie Becken	(330) 370-3084									м3			60			26				
Turnaround Time 10 Days						A				500						0BS		5	-	
PO Number 100067101891					300	504	376	K17:	1254	-Fe	3/602 25M-1	7601	7/60:	015 7801	7826	SIM-	sw90.	w90		ales trade and any blanca
Sample ID Si	Sample Date/Time Type	Matrix	# Containers	ers Preserv						-D						LL	50	60		
HAR20GW01S006	12-Jul-16 9:15 N	Water																		
Alkalinity	Fiel	ield Filtered:	-	4'C		>														
CO2	Fiel	ield Filtered:	2	4'C				<u>S</u>												
1,4-Dioxane LL	Fiel	ield Filtered:	ဗ	HCL pH<2 4C												3		П	Ш	
Methane, ethane, ethene	Fiel	ield Filtered:	3	HCL pH<2 4C				S												
Ba, B, Ca, Mg, K, Na, Sr	Fiel	ield Filtered:	-	HN03, 4'C									2							
Mn	19.E	ield Filtered:	-	HNO3, 4'C								3								
Ferrous Iron	Fiel	ield Filtered:	-	4'C						<u>_</u>										II ;
SO4, CI, NO3, F	Fie	ield Filtered:	-	4'C	3															1-
Conductivity	Fiel	ield Filtered:	-	4'C													3			
Sulfide	Fiel	ield Filtered:	_	NaOH, ZnAc, 4'C			>													
100	Fie	ield Filtered:	_	H2SO4, pH<2, 4'C														S		t—
Ba, B, Ca, Mg, K, Na, Sr	Fie	ield Filtered:	1	HNO3, 4'C							<u>></u>			H						
NDMA - LL	Fie	ield Filtered:	2	4'C							2							H		
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Relinquished by			Lab Name: CalScience	Michele Castro	Jon Freed
Received by			Lab Phone: (949) 870-8766		(208) 660-4929
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Chain of Custody Record		COC Number:	CALS07121601	Ů	Z	CH2MHILL		7/12/2016 12:23:42 PM	16 12	:23:42	PM:	Ра	Page 4 of	of 5			6440	4	W
Project Name SSFL Task Order 582 Project: Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891	Location Set: 3Q2016 SA/PC LB liard kett (4	Santa Susana CP & AIG GWS (530) 570-5084	Santa Susana Field Lab P & AIG GWS 530) 570-5084		504. 300.	A2320	RSK17 E376.	RSK175	SM3500-Fe- SM2540	SW1625M-L	SW6010B/602	SW6010F/602 SW6010	SW8015	SW8015-	SW8260	SW8260BSIM-L	SW906	Sw906	
Sample ID	Sample Date/Time		Type Matrix # Containers	Preserv		В				L				P				0	
3) RD49AGW01S005	12-Jul-16	12:30	N Water										***************************************						
Alkalinity		Carrente	Field Filtered: 1	4'C		>													
002			Field Filtered: 2	4'C				S								H			
1,4-Dioxane LL	And all and a second at the se		Field Filtered: 3	HCL pH<2 4C												>			
Methane, ethane, ethene			Field Filtered: 3	HCL pH<2 4C			>												
Ba, B, Ca, Mg, K, Na, Sr			Field Filtered:	HNO3, 4'C								<u>></u>				H	H		
Mn			Field Filtered: 🗸	HNO3, 4'C								\							
Ferrous Iron			Field Filtered:	4'C					>										
SO4, CI, NO3, F			Field Filtered:	4'C	2														
Conductivity	PROPERTY OF THE STATE OF THE ST	And And And And And And And And And And	Field Filtered:	4'C													2	H	
Sulfide			Field Filtered: 1 N	NaOH, ZnAc, 4'C			<u> </u>									Ħ			
100			Field Filtered: 1 H2	H2SO4, pH<2, 4'C													>		
Ba, B, Ca, Mg, K, Na, Sr			Field Filtered: 1	HNO3, 4'C							<u>></u>								
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Page 5 of 5

7/12/2016 12:23:42 PM



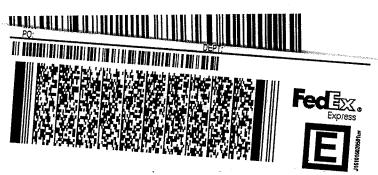
WED - 13 JUL 10:30A PRIORITY OVERNIGHT

TRK# 7835 7171 6217

92841

SNA

XH APVA



TRK# 7835 7170 4452

WED - 13 JUL 10:30A PRIORITY OVERNIGHT

92841





TRK# 7835 7168 8420

WED - 13 JUL 10:30A PRIORITY OVERNIGHT

XH APVA

92841

CA-US SNA



WORK ORDER NUMBER: 16-07- 07-3

SAMPLE RECEIPT CHECKLIST COOLER / OF 3

CLIENT: CH2M HILL DATE: 07 / 13 / 2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue)			
Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 2·7 °C (w/ CF): 2·7 °C;	Blank [⊐ Samr	ole
☐ Sample(s) outside temperature criteria (PM/APM contacted by:)			
☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling			
☐ Sample(s) received at ambient temperature; placed on ice for transport by courier			
Ambient Temperature: ☐ Air ☐ Filter	Checked	1 by: <u>8</u>	2/2
CUSTODY SEAL:			
Cooler	Checked	ا by: _ ۇ	no
Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked		
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	_		
COC document(s) received complete	Ø		
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC			
Sample container label(s) consistent with COC	Ø		
Sample container(s) intact and in good condition	Image: Control of the control of the		
Proper containers for analyses requested			
Sufficient volume/mass for analyses requested	2		
Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time	_		
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen	DAC 316		Ø
Proper preservation chemical(s) noted on COC and/or sample container	3 17		
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals		,	
Container(s) for certain analysis free of headspace			
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation			Ø
			`
CONTAINER TYPE: (Trip blank Lot Number	CPn 17/1	25DP	
CONTAINER TYPE: (Trip Blank Lot Number Aqueous: ☐ VOA ☐ VOAna₂ ☐ 100PJ ☐ 100PJna₂ ☐ 125AGB ☐ 125AGB ☐ 125AGB ☐ 125AGB ☐ 125AGB ☐ 125AGB ☐ 125AGB ☐ 250CGB ☐ 250CGBs ☐ 250PB ☐ 250PB ☐ 500AGB ☐ 500AGB ☐ 500AGB	OD EUUV	10FB 2 le	
□ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ 250 PBnc □ □ □ □ □			
Solid: 40zCGJ 80zCGJ 160zCGJ Sleeve () EnCores [®] () TerraCores [®]	U_ / \ r		
Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix (): □			
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Res		െ	liozz
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na_2} = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Labelet			13.
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$	Reviewed	<u>ر ح</u> ر:yo	<u> </u>

WORK ORDER NUMBER: 16-07- 27-7

SAMPLE RECEIPT CHECKLIST

COOLER $\underline{2}$ of $\underline{3}$

CLIENT: CH2M H111	DATE: 07 / <u>/ 3</u> / 2016
-------------------	------------------------------

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 2 °C (w/ CF): 2 °C; □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling	Blank	□ Sam	ple
☐ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: ☐ Air ☐ Filter	Checked	d by:	836
CUSTODY SEAL: Cooler Present and Intact Present but Not Intact Not Present N/A Sample(s) Present and Intact Present but Not Intact Not Present N/A	Checked Checked		
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers No analysis requested Not relinquished No relinquished date No relinquished time	_	No	N/A
Sampler's name indicated on COC Sample container label(s) consistent with COC			
Sample container(s) intact and in good condition	Ø		
Proper containers for analyses requested			
Sufficient volume/mass for analyses requested			
Samples received within holding time	◪		_
Aqueous samples for certain analyses received within 15-minute holding time			
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen			
Proper preservation chemical(s) noted on COC and/or sample container	Ø		
Unpreserved aqueous sample(s) received for certain analyses ☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals		. <u>_</u>	
Container(s) for certain analysis free of headspace ☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500) ☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			a
Tedlar™ bag(s) free of condensation			
CONTAINER TYPE: (Trip Blank Lot Number			
Aqueous: DVOA DVOAh DVOAna2 D100PJ D100PJna2 D125AGB D125AGBh D125AGB		25PB	/
☑ 125PBznna □ 250AGB □ 250CGB ☑ 250CGBs ☑ 250PB ☑ 250PBn □ 500AGB □ 500AGJ			
□ 500PB ☑ 1AGB □ 1AGBna₂ □ 1AGBs ☑ 1PB □ 1PBna ☑ 250 PBna □ □ □ □			
Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve () ☐ EnCores® () ☐ TerraCores® ()			
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix (): ☐			
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Rese	ealable Ba	9	
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na_2} = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Labeled	/Checked	l by: <u>_/</u>	053
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$	Reviewed	l by:	dry

WORK ORDER NUMBER: 16-07- 82 05 183 3

SAMPLE RECEIPT CHECKLIST COOLER 3 OF 3

CLIENT: CH2M Hill	DATE: 07 / /	<u>13</u> / 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): ②·O °C (w/ CF): ③·O °C (w/	ng	l Sample by: <u>836</u>
CUSTODY SEAL: Cooler Present and Intact Present but Not Intact Not Present Not Present Not Present Not Present Not Present Not Present Not Not Not Not Not Not Not Not Not No		by: <u>876</u> by: <u>{053</u>
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers		No N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition	p	
Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time		
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses		
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		
Tedlar™ bag(s) free of condensation CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □	lumber:	
□ 125PBznna □ 250AGB □ 250CGB ☑ 250CGBs ☑ 250PB ☑ 250PBn □ 500AGB □ 500PB ☑ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna ☑ 250PBp □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	00AGJ ☐ 500AG 1 ☐ ores® () ☐): ☐ oc/Resealable Bag	GJs
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na_2} = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, $\mathbf{b} = \text{NaOH}_3$	abeled/Checked. Reviewed	by: 1053

WORK ORDER NUMBER: 16-07- 0773

SAMPLE ANOMALY REPORT

DATE: 07 / 13 / 2016

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	preservative									
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				type and ana	ilysis <i>)</i>					
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	sample ID	or time								
•	ling date and/ er of containe									
	ested analysis	, ,								
•	ested analysis container(s) co		ed (commer	i+\						
☐ Sample C		Шргоппас	ed (comme	11.)		**************************************		-		
		la cont	cinor					-		
	present in sa			mant\		***************************************				
•	le container(s	Compron	ilseu (com	nem <i>)</i>						
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HEADSPA										
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ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Number**	Requested Ana	llysis
						2-3	Z	1	Ferrous	Iron
<u> </u>										
Comments:				Im I					•	. , ,
	<u></u>		1					I	Reported by:	<u>z</u>
** Record the to	otal number of co	ntainers (i.e.,	vials or bottles	s) for the affected	sample.			F	Reviewed by:	15





WORK ORDER NUMBER: 16-07-0774

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.W

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/26/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name:	3Q2016 SA/PCP & AIG GWS	666267.14.Q3.W

Work Order Number: 16-07-0774

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	3.3 EPA 8330 Nitroaromatics and Nitramines (Aqueous)	7
	3.4 EPA 350.1 Ammonia (Aqueous)	10
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Work Order Narrative

Work Order: 16-07-0774 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/13/16. They were assigned to Work Order 16-07-0774.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-0774

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.W

PO Number:

Date/Time

Received:

Number of Containers: 07/13/16 10:00

36

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR07GWS008	16-07-0774-1	07/12/16 09:30	20	Aqueous
HAR20GW01S006	16-07-0774-2	07/12/16 09:15	9	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-0774				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 9	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8015B (M)	EPA 3510C	972	GC 46	1
EPA 8015B (M)	EPA 5030C	933	GC 56	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-0774 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without furthe clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

- The sample extract was subjected to Silica Gel treatment prior to analysis.
- Χ % Recovery and/or RPD out-of-range.
- Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Page 1 of 2

7/12/2016 12:25:15 PM

CHZMILL

COC Number: CALS07121602

Chain of Custody Record



Received by

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	ţe.		A CONTRACTOR OF THE CONTRACTOR	
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Motel Cley	1 00s/ 91/E1/L	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Metal Cin		On ice: ves / no	Sample Custody	CH614 PO 100067103941
Relinquished by	Maty Wein	*	Virtin		
Received by $\mathcal{H}_{\mathcal{A}}$	Received by D. A. L. L. L.	7/13/16 1000 211111111		and	Report Copy to
Relinguished/bv			Lab Name: CalScience	Michele Castro	Jon Freed
Bereived hv	TO CALL THE THE THE THE THE THE THE THE THE THE	The state of the s	Lab Phone: (949) 870-8766		(208) 660-4929
(a page 1					

to Contents

Richard Villafania

From: Mark.Fesler@CH2M.com
Sent: Friday, July 15, 2016 10:30 AM

To: Richard Villafania

Cc: Linda Ta

Subject: FW: CH582 / 666267.14.Q3.W - 16-07-0774 - Sample Receipt Confirmation & COC

Document

Attachments: 16-07-0774_sample_receipt.pdf

Categories: Need Response

Richard:

Just got word that Sample 16-07-0774-3 (RD41BGW01S007) needs to be cancelled for all analyses. Sample well was not purged correctly; needs to be resampled.

Let me know if you can cancel the analyses before they are started.

Mark Fesler

Associate Scientist Ext. 33273 mark.fesler@ch2m.com

From: Linda Ta [mailto:LindaTa@eurofinsUS.com]

Sent: Thursday, July 14, 2016 9:15 AM

To: Hilliard, Jeremy/MGM <Jeremy.Hilliard@CH2M.com>; Beckett, Jamie/RDD <Jamie.Beckett@CH2M.com>; Fesler,

Mark/RDD <Mark.Fesler@CH2M.com>

Cc: Richard Villafania < Richard Villafania@eurofinsUS.com>

Subject: CH582 / 666267.14.Q3.W - 16-07-0774 - Sample Receipt Confirmation & COC Document [EXTERNAL]

Good morning All,

Please advise if you require Appendix IX – SVOCs, Pthalates – SVOCs, or both for sample "HAR20GW01S006". Also please review sample anomaly form.

Thanks!

Linda Ta

Project Manager Assistant

Eurofins Calscience, Inc.

7440 Lincoln Way Garden Grove, CA 92841 USA

P: +1 714 895 5494 F: +1 714 894 7501

Email: LindaTa@eurofinsus.com

Website: http://secure-web.cisco.com/1YSgeddzyimJferpv-1EGIApj-

grd9cLBHDhOfHGLezbYI H8txrVMwFr EhBaa7a eBTk8mkqHoLlXHfaGr08zQG3KPTXpPMh3nL1mguX33mOGHkJPy3

dgepMQ5-n4nTA5xHbW2xT-



(0774)

WED - 13 JUL 3:00E STANDARD OVERNIGHT

TRK# 7835 7173 0839

92841

XH APVA

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WED - 13 JUL 10:30A PRIORITY OVERNIGHT

TRK# 7835 7171 6217

XH APVA

92841

CA-US SNA



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WORK ORDER NUMBER: **16–07–** Page 50 of 52

SAMPLE RECEIPT CHECKLIST COOLER / OF 2

CLIENT: CH2MHII)	DAT	E: 07 / <u>/3</u>	<u> </u>					
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): ② · O · °C (w/ CF): ② · O · °C; ✓ Blank □ Sample □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling □ Sample(s) received at ambient temperature; placed on ice for transport by courier								
Ambient Temperature: Air Filter		Checked by:	826					
CUSTODY SEAL:			C - 1					
		Checked by:						
SAMPLE CONDITION:	,	Yes No	N/A					
Chain-of-Custody (COC) document(s) received with samples		z <u> </u>						
COC document(s) received complete		ø o						
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers								
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished								
Sampler's name indicated on COC	*							
Sample container label(s) consistent with COC		. •						
Sample container(s) intact and in good condition	•	* ,						
Proper containers for analyses requested		/						
Sufficient volume/mass for analyses requested								
Samples received within holding time								
Aqueous samples for certain analyses received within 15-minute holding time			_					
pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen		<i>f</i>						
Proper preservation chemical(s) noted on COC and/or sample container		ø o						
Unpreserved aqueous sample(s) received for certain analyses								
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals								
Container(s) for certain analysis free of headspace	· • • • • • • • • • • • • • • • • • • •	₽ □						
✓ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500))							
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach))							
Tedlar™ bag(s) free of condensation			ø					
CONTAINER TYPE: (Trip Blank L	_ot Number:)					
CONTAINER TYPE: (Trip Blank L Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGB □ 125AGBB □ 125AG	□ 500AGJ [□ □ □ erraCores [®] (□ 500AGJs □) □						
Container: $A = Amber$, $B = Bottle$, $C = Clear$, $E = Envelope$, $G = Glass$, $J = Jar$, $P = Plastic$, and $Z = Iar$			<i>a</i>					
Preservative: \mathbf{b} = buffered, \mathbf{f} = filtered, \mathbf{h} = HCI, \mathbf{n} = HNO ₃ , \mathbf{na} = NaOH, $\mathbf{na_2}$ = Na ₂ S ₂ O ₃ , \mathbf{p} = H ₃ PO ₄ ,	Labeled/C	Shecked by: §	106/619					
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$		eviewed by:\						

 $\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$

WORK ORDER NUMBER: 16-07- 27-44

	SAMPLE RECEIPT	CHECKLIST		COOLER	₹ <u> </u>	OF <u>~</u>
CLIENT: CHOMHIII			D	ATE: 07	1/3	_/ 2016
TEMPERATURE: (Criteria: 0.0°C − 6 Thermometer ID: SC1B (CF: 0.0°C); ☐ Sample(s) outside temperature ☐ Sample(s) outside temperature ☐ Sample(s) received at ambient tem	remperature (w/o CF): 2 criteria (PM/APM contacted by criteria but received on ice/chilperature; placed on ice for train	°C (w/ CF): r:) lled on same day o			□ Sar	_
Ambient Temperature: ☐ Air ☐ Filter				Спеск	.ea by: _	076
CUSTODY SEAL: Cooler Present and Intact Sample(s) Present and Intact	☐ Present but Not Intact☐ Present but Not Intact	☐ Not Present ☑ Not Present	□ N/A □ N/A		ed by: _ ed by: _	
SAMPLE CONDITION:				Yes	No	N/A
Chain-of-Custody (COC) document(s) COC document(s) received complete				* ,		
□ Sampling date □ Sampling tim □ No analysis requested □ Not re Sampler's name indicated on COC Sample container label(s) consistent we Sample container(s) intact and in good Proper containers for analyses request Sufficient volume/mass for analyses re Samples received within holding time Aqueous samples for certain analysi □ pH □ Residual Chlorine □ Die Proper preservation chemical(s) noted Unpreserved aqueous sample(s) re □ Volatile Organics □ Total Meta Container(s) for certain analysis free of Volatile Organics □ Dissolved □ Carbon Dioxide (SM 4500) □ F	elinquished □ No relinquished vith COC	holding time Oxygen ainer ad Oxygen (SM 45)	00)			
Tedlar™ bag(s) free of condensation						1 21
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAn □ 125PBznna □ 250AGB □ 250CGB □ 500PB □ 1AGB □ 1AGBna₂ □ 1. Solid: □ 4ozCGJ □ 8ozCGJ □ 16oz Air: □ Tedlar™ □ Canister □ Sorber Container: A = Amber, B = Bottle, C = Cle Preservative: b = buffered, f = filtered, h =	B □ 250CGBs □ 250PB □ 3 AGBs □ 1PB □ 1PBna □ □ CGJ □ Sleeve () □ En nt Tube □ PUF □ ar, E = Envelope, G = Glass, J =	125AGB ☐ 125AG 250PBn ☐ 500AG ☐ ☐ ☐ Cores® (B □ 500A0 □ □ □ TerraCores : Z = Ziploc/Re	AGBp GJ 500 C C C C C C C C C C C C	125PB AGJs	

Reviewed by: Sr

WORK ORDER NUMBER: 16-07- 299 529 54 54 44

SAMPLE ANOMALY REPORT

DATE: 07 / 13 / 2016

SAMPLES, CONTAINERS, AND LABELS:					Commer	nts			
☐ Sample(s) NOT RECEIVED but listed on COC									
☐ Sample(s) received but NOT LISTED on COC					***************************************				
☐ Holding	time expired (list client o	r ECI samp	le ID and ana	lysis)				
☐ Insufficie	ent sample am	nount for re	quested an	alysis (list an	alysis)				
☐ Imprope	r container(s)	used (list a	analysis)						
☐ Imprope	r preservative	used (list	analysis)				la Þ	,	
☐ No prese	ervative noted	on COC o	r label (list	analysis and	notify lab)	(-1)	Receive		Containers
□ Sample	container(s) n	ot labeled				in	stead		<u> </u>
☐ Client sa	ample label(s)	illegible (li	st container	type and ana	alysis)	(2-1 lifer amker glass			
Z Client sa	ample label(s)	do not ma	tch COC (c	omment)		<u></u>	or SW	3315 N	not requested
□ Proje	ect information	ı				<u> </u>	n coc)	•
☐ Clien	it sample ID								
□ Sam	pling date and	l/or time				-			
Num	ber of contain	er(s)				(-2) Received 9 containers			
₽ Requ	uested analysi	s				instead of 7			
☐ Sample	container(s) c	ompromise	ed (comme	nt)		(2 - 1 liter amber glass			
☐ Brok	en					for SW 8315 not requested			
☐ Water present in sample container			on coc)						
☐ Air sample container(s) compromised (comment)									
☐ Flat									
☐ Very low in volume									
☐ Leaking (not transferred; duplicate bag submitted)									
□ Leak	ing (transferre	ed into ECI	Tedlar™ b	ags*)					
□ Leak	ing (transferre	ed into clier	nt's Tedlar [⊤]	[™] bags*)					
* Transfer	rred at client's req	uest.							
MISCELL	ANEOUS: (I	Describe)				Commer	nts		
HEADSP	ΔCE·								
	ith bubble > 6 mm	or ¼ inch for	volatile organ	ic or dissolved ga	s analysis)	(Containers wi	th bubble for othe	r analysis)	
ECI	ECI	Total	ECI	ECI	Total	ECI Comple ID	ECI Container ID	Total Number**	Requested Analysis
Sample ID	Container ID	Number**	Sample ID	Container ID	Number**	Sample ID	Container ID	Number	Requested Analysis
		-							
	L					:			
Comments	·							E	Reported by: 6179
							- · · · · · · · · · · · · · · · · · · ·	. г	Reported by: 617
** Record the	total number of co	ontainers (i.e.	, vials or bottle	s) for the affected	sample.	•		, r	Ceviewed by





WORK ORDER NUMBER: 16-07-0858

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/27/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

lient Project Name: 3Q2016 SA/PC	CP & AIG GWS / 666267.14.Q3.F
lient Project Name: 3Q2016 SA/PC	CP & AIG GWS / 666267.14.Q3.F

Work Order Number: 16-07-0858

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 EPA 300.0 Anions (Aqueous). 3.2 EPA 314.0 Perchlorate (Aqueous). 3.3 EPA 8330 Nitroaromatics and Nitramines (Aqueous). 3.4 EPA 350.1 Ammonia (Aqueous). 3.5 SM 4500 H+ B pH (Aqueous). 3.6 EPA 8015B (M) C8-C40 (Aqueous). 3.7 EPA 8015B (M) TPH Gasoline (Aqueous). 3.8 EPA 1625C (M) NDMA (Aqueous). 3.9 EPA 8260B Volatile Organics (Aqueous). 3.10 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 7 10 11 12 14 15 16 31
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 Sample Duplicate. 4.3 LCS/LCSD.	33 33 38 39
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Work Order Narrative

Work Order: 16-07-0858 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/13/16. They were assigned to Work Order 16-07-0858.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-0858

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers: 07/13/16 18:45

58

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2443Q001	16-07-0858-1	07/13/16 07:00	9	Aqueous
RD05AGW01S006	16-07-0858-2	07/13/16 10:15	20	Aqueous
RD05BGW01S007	16-07-0858-3	07/13/16 13:00	20	Aqueous
RD40GW01S007	16-07-0858-4	07/13/16 13:15	3	Aqueous
SP33CGW01S005	16-07-0858-5	07/13/16 09:00	6	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-0858			Page 1 of 1	
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8015B (M)	EPA 3510C	972	GC 46	1
EPA 8015B (M)	EPA 5030C	933	GC 56	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-0858 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
Е	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- concentration by a factor of four or greater.
- SG The sample extract was subjected to Silica Gel treatment prior to analysis.X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Jon Freed (208) 660-4929

Michele Castro

Lab Name: CalScience Lab Phone: (949) 870-8766

Airbill No:

Relinquished by

Received by

Relinquished by

Received by

and

Report Copy to

Page 1 of 4

7/13/2016 2:17:44 PM

CHZMIII

COC Number: **CALS07131601**

Chain of Custody Record





MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
	Signatyres	Date/Time	Shipping Details		Special Instructions:
Approved by	Match Clin	1/13/16 1800	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Moter Cles	,	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		CH614 PO 100067103941
Relinquished by	Water an	→	Oil ice. yes / iio	sample custody	
Received by	10 mg	7/13/10 15:00 AITDIII NO.	Airbill No:	and	Report Copy to
Relinquished by	The second second	2/13/11, 13/2/F	Lab Name: Calscience	Michele Castro	Jon Freed
Received by	Chunch en	71116 184	71116 1824-Lab Phone: (949) 870-8766	-	(208) 660-4929

Contents



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CH2NHILL 7/13/2016 2:17:44 PM

COC Number: CALS07131601

Chain of Custody Record

Project Name SSFL Location Santa Sus Task Order 582 Project 3Q2016 SA/PCP & AIG G Project Number Sangharmserter (CCQLCT, IY.Q3, FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-51 Turnaround Time 10 Days PO Number 100067103941 Sample Date/Time 1	Location Santa Su 2016 SAPCP & AIG (んろして, 14・公子, ドル (530) 570-4 Sample Date/Time	Susana Field Lab IG GWS FW 70-5084 e Type Matrix # Containers	ainers Preserv	E314.1	SW1625M-LL SM4500NH3F	SW6850	SW8015-P SW8015B	SW8260B	SW8330A SW8260BSIM-LL	SW9040				
RD05BGW01S007 13-	13-Jul-16 13:00	N Water												
1,4-Dioxane LL		Field Filtered 3	3 HCL pH<2.4C						<u>></u>			H		Г
Nitrobenzene, 1,3-Dinitrobenzene		Field Filtered 2	4'C						<u>></u>					
Fluoride, Nitrate		Field Filtered	4'C	S										
Ammonia		Field Filtered	H2SO4, pH<2, 4'C		>									
NDMA - LL	A Company of the Comp	Field Filtered 2	2 4'C			<u> </u>								
Perchlorate		Field Filtered 🗸	4'C	<u>S</u>										
Perchlorate - HOLD		Field Filtered	4'C			>								
Hd		Field Filtered 1	1 4'C							S				
Report Carbon Ranges incl. EFH C8-C30 Total		Field Filtered 2	2 4'C				<u>></u>							
VOCs full list		Field Filtered 3	3 HCL pH<2.4C					2						
Report Carbon Ranges		Field Filtered 🗌 3	3 HCL pH<24C				<u>\</u>							
		Total Containers:	ners: 20											
					CONTRACTOR CONTRACTOR	CALLED TO SECURE OF THE SECURE								1

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicat	te		airennii sharishida uurikungidadhuu sharibu qirka kuralidadha kapalaadada kabaadaan kalaadaan kalaadaan kalaad	
	Signatures	pate/Time	Shipping Details		Special Instructions:
Approved by	Moter Clerk	7/13/16 1500	7/13/16 150c Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Mitch (luis				CH614 PO 100067103941
Relinquished by	Metal Clin		Unice: yes / no	Sample Custody	
Received by	JA THE	7/13/16 150	Airbill No:	and	Report Copy to
Relinquished by /	The second secon	7/13/11 184K	7/13/11 184(Lab Name: CalScience	Michele Castro	Jon Freed
Received by	Man San	7/8/6 18X	Lab Phone: (949) 870-8766		(208) 660-4929
	0				





	Special Instructions:	CH582 PO: 100067101891	CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929	
		ATTN:		Sample Custody	and	Michele Castro		
	Shipping Details	Method of Shipment: FedEx	į	On ice: yes / no	(S. Delininos	(1), u tab name: Calscience	7/13/16 (84) Lab Phone: (949) 870-8766	
Đ.	Date/Time	005/ 01/2//2	,	e, e	7/13/16 15.0	7/12//h to m	4/13/12 187	
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures	Muto Clan	Mot this	Motel Clin	772	N	Dinnye en	<i>></i>
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by	

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST COOLER ___ OF ___3__

CLIENT:	CHZMHILL	DATE: 07 / <u>13</u> / 2016

TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):	Blank D	∃ Sam _l	ple
☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling			
☐ Sample(s) outside temperature criteria but received on ice for transport by courier			
Ambient Temperature: Air Filter	Checked	by: 🙎	04
Ambient Temperature. 17 M. 17 Mei			
CUSTODY SEAL:		0	nu l
Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked		
Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked	l by: <u>\</u>	97
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples			
COC document(s) received complete			
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time	!		
Sampler's name indicated on COC			
Sample container label(s) consistent with COC			
Sample container(s) intact and in good condition	. Z		
Proper containers for analyses requested			
Sufficient volume/mass for analyses requested	. 💆		
Samples received within holding time	. 🔽		
Aqueous samples for certain analyses received within 15-minute holding time			
Z pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	. 🗖 🖯	9	
Proper preservation chemical(s) noted on COC and/or sample container	. 🗹		
Unpreserved aqueous sample(s) received for certain analyses	,		
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals	• /	/	
Container(s) for certain analysis free of headspace	4/13/10		
✓ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)	1 11 11		
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	. 🗆		Z
(Trin Diant Lat Numb)
Aqueous: UOA DOOAh UOAha DOOAha DOOAAha DOOAha DOOAha DOOAha DOOAha DOOAha DOOAha DOOAha DOOAha DOOA	AGBp 🗷 1	25PB	
Aqueous: □ VOA □ VOAII □ VOAIIa₂ □ 1001 0 □ 1001 0 IIa₂ □ 1201 0 □ 1250PBn □ 500AGB □ 500AGB □ 500AGB	J □ 500A	.GJs	
□ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □	□.		
Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve () EnCores® () TerraCores®	· ()	o	
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix ():		_ U_	
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Re	sealable Ba	ag	Ca
Preservative: $b = buffered$, $f = filtered$, $h = HCl$, $n = HNO_3$, $na = NaOH$, $na_2 = Na_2S_2O_3$, $p = H_3PO_4$, Labelle	ed/Checke	d by: _	1011
s = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOH	Reviewe	d by: _	14_

WORK ORDER NUMBER: 16-07-

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CHZM HILL DAT	E: 07 /	15/	2016
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):°C; E°C (w/ CF):°C; E		□ Sampl d by: & 0	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		d by: <u>3/</u> d by: <u>[</u>	. r\
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete	Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time ph □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	. 🛮		
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		_	
Tedlar™ bag(s) free of condensation CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 125AGBh □ 125AGB □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 500AG □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	er: AGBp / \(\begin{aligned} \text{J} & \text{D 500} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\		
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Re Preservative: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOH, na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₄ , Labele s = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOH	sealable B ed/Check	ag	217

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST

COOLER 3 OF 3

CLIENT: CHZM HILL	DATE: 07	1 13 1	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7 °C (w/		□ Sam _l	ole
Ambient Temperature: □ Air □ Filter	Check	ed by: 🧏	04
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N		ed by: <u>&</u> ed by: <u>1</u>	
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete	A		
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers ☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquishe	ed time		_
Sampler's name indicated on COC	<u>P</u>		
Sample container label(s) consistent with COC	pi		
Sample container(s) intact and in good condition	💆		
Proper containers for analyses requested	<u>1</u>		
Sufficient volume/mass for analyses requested	<u>p</u>		
Samples received within holding time	······· /		
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen			p /
Proper preservation chemical(s) noted on COC and/or sample container			Ó
Unpreserved aqueous sample(s) received for certain analyses	,		
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			_/
Container(s) for certain analysis free of headspace	0		Ø
☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)		_	
Tedlar™ bag(s) free of condensation			Ø
CONTAINER TYPE: (Trip Blank Lot)
Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh	500AGJ	DAGJ s	
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix (): U	U_	
Container: $A = Amber$, $B = Bottle$, $C = Clear$, $E = Envelope$, $G = Glass$, $J = Jar$, $P = Plastic$, and $Z = Zi$. Preservative: $b = buffered$, $f = filtered$, $h = HCl$, $n = HNO_3$, $na = NaOH$, $na_2 = Na_2S_2O_3$, $p = H_3PO_4$,	ploc/Resealable Labeled/Chec	Bag ked by:	<u> </u>

 $s = H_2SO_4$, u = ultra-pure, $znna = Zn(CH_3CO_2)_2 + NaOH$

Reviewed by:

WORK ORDER NUMBER: 16-07- 25-59 of 59

SAMPLE ANOMALY REPORT

DATE: 07 / <u>13</u> / 2016

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☐ Insufficient sample amount for requested analysis (list analysis)	
☐ Improper container(s) used (list analysis)	
☐ Improper preservative used (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	
☐ Client sample label(s) do not match COC (comment)	
☐ Project information	
☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	-
☐ Air sample container(s) compromised (comment)	·
□ Flat	
□ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
□ Leaking (transferred into ECl Tedlar™ bags*)	
□ Leaking (transferred into client's Tedlar™ bags*)	
* Transferred at client's request.	
MISCELLANEOUS: (Describe)	Comments
HEADSPACE:	
(Containers with bubble > 6 mm or $rac{1}{2}$ inch for volatile organic or dissolved gas analysis	(Containers with bubble for other analysis)
ECI ECI Total ECI ECI Total Sample ID Container ID Number** Sample ID Container ID Number	ECI ECI Total Sample ID Container ID Number** Requested Analysis
1 D 9	
-2 (emety)	
13 40 6	
Comments:	
	Reported by: 10 77 8
The production of the state of	Reviewed by: 77 8





WORK ORDER NUMBER: 16-07-0920

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: 3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.F

Work Order Number: 16-07-0920

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4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-0920 EPA 8315 Formaldehyde and 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-0920 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/13/16. They were assigned to Work Order 16-07-0920.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-0920

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of

07/13/16 09:40

8

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR07GWS008	16-07-0920-1	07/12/16 09:30	4	Aqueous
HAR20GW01S006	16-07-0920-2	07/12/16 09:15	4	Aqueous





Glossary of Terms and Qualifiers

Work Order: 16-07-0920 Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

- The sample extract was subjected to Silica Gel treatment prior to analysis.
- Χ % Recovery and/or RPD out-of-range.
- Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

11053 (1682189) (8472574-45

16-07-0920

CH2MHILL 7/12/2016/12:27:03 PM Page 1 of 1

COC Number: CALS07121603

Chain of Custody Record

				ŀ	-	-	-	-	_	_	-	_	1
Project Name SSFL Task Order 582 Project: 3Q2 Project Number 666267.14.Q3.FW	Location 016 SA/PC	Santa Susana Field Lab :P & AIG GWS											
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	34					1						
Turnaround Time 10 Days PO Number 100067103941				SW8315									,
Sample ID	Sample Date/Time Ty	Sample Date/Time Type Matrix # Containers Preserv	Preserv										
HAR07GWS008	12-Jul-16 9:30	N Water											
Formaldehyde		Field Filtered: 2	4'C	S									
1,1-DМН, UDМН		Field Filtered: 2	4'C	>									
		Total Containers:	4										
HAR20GW01S006	12-Jul-16 9:15	N Water											
Formaldehyde		Field Filtered: ☐ 2	4'C	S									
1,1-DMH, UDMH		Field Filtered: ☐ 2	4'C	>									
		Total Containers:	4										

And - Branchis Carles	Martin Caile CD - Matrix Caile Dunlicate				
MIS = MISHIN Spike	30 - Induit opine Dapinease		AND THE RESERVE THE PROPERTY OF THE PROPERTY O		
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Matel Cler	ops/ 01/21/2	Mathod of Shipmont: Foolis	ATTN:	CH582 PO: 100067101891
	Many Co.	1,			CH614 PO 100067103941
Sampled by	che con		On ice: ves / no	Sample Custody	
Relinguished by	Met Car	⇒ >		Grand and the control of the control	
C- namehiman			Airbill No:	and	
Received by				<u> </u>	Report Copy to
			Lab Name: Lancaster Laboratones	Kav Hower	Jon Freed
Kelindulsned by			1 ah Dhane: (218) 618,8880		(208) 660-4929
Received by	{	7-13-ic / gue	2-13-16 / Que Laurinine: (310) 310 330		200 (200)
)				

Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

Page 7 of 17

Group Number(s): 1682189

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/13/2016 9:40

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

Ó

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes

Missing Samples:

No No

Extra Samples:

No

Unpacked by Timothy Cubberley (6520) at 10:58 on 07/13/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler# Thermometer ID

DT131

Corrected Temp 1.8

Discrepancy in Container Qty on COC:

Therm. Type DT

Ice Type Wet

Ice Present?

Ice Container Loose

Elevated Temp?

work order number: 16-07- 801.20

Calscience

SAMPLE RECEIPT CHECKLIST

coo	LER	(0	F	

CLIENT: $\frac{(42)^{1}}{(42)^{1}}$	DATE: 07	1 14 1	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of samplic □ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	ng	□ Sam	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		ed by:	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	/es	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested		_ _ _	_ _ _
Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses received within 15 minute holding time	🛘		
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses □ Volatile Organics □ Total Metals □ Dissolved Metals		0	<u> </u>
Container(s) for certain analysis free of headspace ☐ Volatile Organics ☐ Dissolved Gazes (RSK-175) ☐ Dissolved Oxygen (SM 4500) ☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)	🗖		
Tedlar™ bag(s) free of condensation			
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 50 □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □ Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ □ □ Other Matrix (□ □ Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziplo Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, Lass = H₂SO₄, u = ultra-pure, znna = Zn(CH₃CO₂)₂ + NaOH	125AGBp OAGJ 500 ores® () oc/Resealable abeled/Check	1125PB)AGJ s] Bag	



Subcontractor Analysis Report

Work Order: 16-07-0920 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-0920

Submittal Date: 07/13/2016 Group Number: 1682189 SDG: CSF11 PO Number: 16-07-0920 State of Sample Origin: CA

Client Sample Description HAR07GWS008 Water HAR20GW01S006 Water Lancaster Labs (LL) # 8472544 8472545

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience
Electronic Copy To Eurofins Calscience

Attn: Terri Chang Attn: Richard Villafania

Respectfully Submitted,

Kay Mour

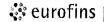
(510) 672-3979

11053 (1682189) (8472544-45

Chain of Custody Record	COC Number: CALS07121603		CH2NHLL 7/12/2016 12:27:03 PM Page 1 of 1
ct : 3Q2 Q3.FW iard	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084		
Turnaround Time 10 Days PO Number 100067103941		SW8315	
Sample ID Sample D	Sample Date/Time Type Matrix # Containers Pr		
HAR07GWS008 12-Jul-16	9:30 N Water		
Formaldehyde	Field Filtered: 2 4'	4.C	
1,1-DMH, UDMH	Field Filtered: ☐ 2 4	4.C	
	Total Containers:	4	
HAR20GW01S006 12-Jul-16	9:15 N Water		
Formaldehyde	Field Filtered: 2 4	4.c	
1,1-РМН, UБМН	Field Filtered: 2 4'	4'C	
	Total Containers:	4	

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
:	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by		1/12/16 1500	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Relinquished by	Met Ch	->	On Ice: yes / no	Sample Custody	700000
Received by			Airbill No:	and	Report Conv to
Relinquished by			Lab Name: Lancaster Laboratories	Kay Hower	Jon Freed
Received by	30	7-13-10 John 1	Lab Phone: (318) 618-8889		(208) 660-4929





Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: Page 16 of 17 153595

Group Number(s): 1682189

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/13/2016 9:40

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

Air Quality Samples Present:

N/A

Nο

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Yes

Yes

Missing Samples:

No

Extra Samples:

Samples Intact:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Timothy Cubberley (6520) at 10:58 on 07/13/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#

Thermometer ID DT131

Corrected Temp 1.8 Therm. Type
DT

Ice Type Wet

Ice Present? Y Ice Container Loose Elevated Temp?
N



Lancaster Laboratories
Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basisResults printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.







WORK ORDER NUMBER: 16-07-0971

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/26/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

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Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB
Work Order Number:	16-07-0971

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data	5
	3.1 RSK-175M Carbon Dioxide (Aqueous)	5
	3.2 RSK-175M Dissolved Gases (Aqueous)	6
	3.3 EPA 300.0 Anions (Aqueous)	7
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	3.6 SM 2540 C Total Dissolved Solids (Aqueous)	10
	3.7 SM 3500-FeB Ferrous Iron (Aqueous)	11
	3.8 SM 4500 S2 - D Sulfide (Aqueous)	12
	3.9 SM 5310 B Total Organic Carbon (Aqueous)	13
	3.10 EPA 8015B (M) C8-C40 (Aqueous)	14
	3.11 EPA 8015B (M) TPH Gasoline (Aqueous)	16
	3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous)	17
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	3.14 EPA 1625C (M) NDMA (Aqueous)	21
	3.15 EPA 504.1 EDB and DBCP (Aqueous)	22
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Work Order Narrative

Work Order: 16-07-0971 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/14/16. They were assigned to Work Order 16-07-0971.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-0971

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/14/16 19:30

Received:

Number of 71

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2444Q001	16-07-0971-1	07/14/16 07:00	9	Aqueous
WS06GW01S002	16-07-0971-2	07/14/16 10:00	31	Aqueous
WS08GW01S002	16-07-0971-3	07/14/16 12:00	31	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-0971				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	1063	GC 25	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-0971 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without furthe clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

- I ne sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Shain of Custody Record	COC Number: CALS07141601	CH2MHILL	7/14/2016 2:38:55 PM	Page 1 of 5	16-U/-US
roject Name SSFL Locat ask Order 582 Project: 3Q2016 S roject Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 7.82.LB				
roject Manager Jeremy Hilliard ample Manager Jamie Beckett	(530) 570-5084		SW		SW826
urnaround Time 10 Days O Number 100067101891		E376 A232 504 300	SW601 10B/60 1625M- 500-Fe SM254 RSK17	SW826 SW8015 SW801 10F/60	SW90 SW90
ample ID Sampl	Sample Date/Time Type Matrix # Containers Pro	.2 0B	20 LL -D 0C	-P 5B	50
:AQW2444Q001	-16 7:00 N Water				
1,4-Dioxane LL	Field Filtered: 3 HCL pH<2 4C	<2 4C			
VOCs full list	Field Filtered: 3 HCL pH<2 4C	<2 4C			
Report Carbon Ranges	Field Filtered: ☐ 3 HCL pH<2 4C	<2 4C		S	
	Total Containers:	.6			
		The state of the s			

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Matel Clu	0001 31/1//	7/14/16 1600 Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Met Cler				CH614 PO 100067103941
Relinquished by	Met ali	_ &	On ice: yes / no	Sample Custody	
Received by	My Ed	7/W/16/8	Airbill No:	and	Report Copy to
Relinquished by	13	7 (in lb. 30	子[以][[人] (约.30] Lab Name: CalScience	Michele Castro	Jon Freed
Received by	NOW ECI		Lab Phone: (949) 870-8766		(208) 660-4929
~	A.				



Project Name SSFL	GWS 5084 Type Matrix # Containers N Water Field Filtered:□ 1 Field Filtered:□ 2 Field Filtered:□ 3 H	iers Preserv									<u> </u>	
14-Jul-16 10:00	Water d Filtered d Filtered d Filtered		A2320B 504.1 300.0	RSK175 E376.2	SM2540C RSK175M	SW1625M-LL SM3500-Fe-D	SW6010F SW6010B/6020	SW6010F/6020	SW8015-P SW8015B	SW8260BSIM-LL SW8260B	SW9060 SW9050	
ine Sr												
a .		4'C	S									
g.		4'C			<u> </u>							
a .		HCL pH<2 4C								2		
	Field Filtered: 3	HCL pH<2 4C		S								
	Field Filtered: 🗸	HN03, 4'C						2				
Mn Field Fil	Field Filtered: 🗸	HNO3, 4'C					<u>S</u>					
Ferrous Iron	Field Filtered: 🗸	4'C				□ 3						
SO4, Cl, NO3, F	Field Filtered: 1	4'C	<u> </u>									
Conductivity Field Fil	Field Filtered: 1	4'C									<u> </u>	
Sulfide Field Fil	Field Filtered: 1	NaOH, ZnAc, 4'C		<u> </u>								
TOC Field Fil	Field Filtered: 1	H2SO4, pH<2, 4'C									<u>></u>	
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 1	HN03, 4'C					S					
NDMA - LL Field Fil	Field Filtered: 2	4'C										
MS = Matrix Spike SD = Matrix Spike Duplicate Approved by Sampled by Relinquished by Received by	95.30	Shipping CalScience (949) 870-87	FedEx FedEx 786			AT Sample a a	ATTN: Sample Custody and Michele Castro		Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929	nstructions: -0: 1000671016 -0: 0000671039 -0: 0000671039 -0: 0000671039 -0: 0000671039 -0: 0000671039	ons: 671018 571039 77039 674029	41



Page 3 of 5

7/14/2016 2:38:55 PM

CHZMIII

COC Number: **CALS07141601**

Chain of Custody Record





M

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mate Chi	009/9/////	Method of Shipment: FedEx	Z Z	CH582 PO: 100067101891
Sampled by	10000 CA		On Ice: yes / no	Sample Custody	146501 700001 01 41010
Received by	31	2- (u/11) 160	(b. D Airbill No:	and	Report Conv to
Relinquished by	H	4/14/16 10.30	THAME (9,30 Lab Name: CalScience	Michele Castro	Jon Freed
Received by	WINT ECT	02/4/6 1930	07(4)6 430 Lab Phone: (949) 870-8766		(208) 660-4929
		-			
\					



WORK ORDER NUMBER: 16-07 (1990)

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 2

CLIENT: _	CHZMHIU			DA.	TE: 07 /	14/	2016
Thermome Sam Sam Sam Sample	eter ID: SC1B (CF: 0.0°C); Tople(s) outside temperature cople(s) outside temperature cople(s) received at ambient temp	o°C, not frozen except sedime emperature (w/o CF):3. friteria (PM/APM contacted by riteria but received on ice/chiperature; placed on ice for tra	C (w/ CF): :) lled on same day o			□ Samp	
Ambient T	emperature: □ Air □ Filter				Checke	u by(~ +
CUSTODY Cooler Sample(s)	☐ Present and Intact	☐ Present but Not Intact ☐ Present but Not Intact	☑ Not Present ☐ Not Present	□ N/A □ N/A		d by: <u>{</u> d by:[<u></u>	
SAMPLE	CONDITION:				Yes	No	N/A
COC docu	Custody (COC) document(s)	received with samples			. <u>p</u>		
☐ Sam	pling date Sampling time	e □ Matrix □ Number of celinquished □ No relinquish	ontainers				
Sampler's	name indicated on COC				. 72		
Sample co	ontainer label(s) consistent v	vith COC			. p	ا ا	
Sample co	ontainer(s) intact and in good	d condition					
Proper co	ntainers for analyses reques	sted			בע ה		
Sufficient	volume/mass for analyses re	equested			💆		
Agueo	us samples for certain analy	ses received within 15-minute	e holding time				 /
На□	☐ Residual Chlorine ☐ Di	ssolved Sulfide 🛚 Dissolved	l Oxygen		U		<u> </u>
		d on COC and/or sample con	ainer		7	<u> </u>	
		eceived for certain analyses					
Container	tile Organics	of headspace			🗆	<u> </u>	
/ Vola	atile Organics	Gases (RSK-175) ☐ Dissol	ved Oxygen (SM 4	500)		٠	
☐ Car	oon Dioxide (SM 4500)	Ferrous Iron (SM 3500) 🗆 H	ydrogen Sulfide (H	ach)			_/
Tedlar™	oag(s) free of condensation				🛮		7
CONTAIN Aqueous	NER TYPE: D VOA D VOAh D VOAr Znna D 250AGB D 250CG	na ₂ □ 100PJ □ 100PJna ₂ I B □ 250CGBs ☑ 250PB ☑ IAGBs ☑ 1PB □ 1PBna ☑	(Trip Bla ☐ 125AGB ☐ 125A ☐ 250PBn ☐ 500A ☐ 250PBu ☐ ☐	nk Lot Numb AGBh □ 125 GB □ 500AC	oer: AGBp ∕☐ SJ ☐ 500	A009 I)
Solid:	4ozCGJ □ 8ozCGJ □ 16oz	zCGJ □ Sleeve () □ E	Other Matrix ():			
Air: 🗆 le	Qiai ···· Li Canistei Li Sorbe	ear, E = Envelope, G = Glass, J	= Jar, P = Plastic, an	d Z = Ziploc/R	esealable E	Bag	
Container	A = Amper, b = bottle, C = Oil	= HCL n = HNO3, na = NaOH, n	$a_2 = Na_2S_2O_3$, $p = H_3$	PO ₄ , Labe	led/Check	ed by: <u> </u>	017

 $s = H_2SO_4$, u = ultra-pure, $znna = Zn(CH_3CO_2)_2 + NaOH$

Reviewed by: __

WORK ORDER NUMBER: 16-07 中 (1997).

SAMPLE RECEIPT CHECKLIST COOLER 2 OF 2

CLIENT: CHZM HIU		DATE: U/ /	14/	2010	
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissur Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C °C □ Sample(s) outside temperature criteria (PM/APM contacted by: □ Sample(s) outside temperature criteria but received on ice/chilled on s□ Sample(s) received at ambient temperature; placed on ice for transport both Ambient Temperature: □ Air □ Filter	(w/ CF): <u>3 · 6</u>) same day of samplin	g	□ Samp		
Cooler Liteschi and intact	t Present □ N/A t Present □ N/A	Checke Checke	ed by: _{@	604 017	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of container		Yes	No	N/A	
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time					
Aqueous samples for certain analyses received within 15-minute holding pH Residual Chlorine Dissolved Sulfide Dissolved Oxyge Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	g time n	🗖		d	
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace	gen (SM 4500)	🗖	9		
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydroger Tedlar™ bag(s) free of condensation				ø	
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AG □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ 250PB Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ EnCores Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S	(Trip Blank Lot Not Blank Lot	umber: 125AGBp	125PB AGJs I Bag ed by: _	- - - - - - -	
$s = H_0SO_4$ $\mu = ultra-pure$, $znna = Zn(CH_3CO_2)_2 + NaOH$		Review	ed by:	6) 1	



** Record the total number of containers (i.e., vials or bottles) for the affected sample.

WORK ORDER NUMBER: 16-07- 80 of 80

SAMPLE ANOMALY REPORT

DATE: 07 / 14 / 2016

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☐ Insufficient sample amount for requested analysis (list analysis)	
☐ Improper container(s) used (list analysis)	
☐ Improper preservative used (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)	
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	
☐ Client sample label(s) do not match COC (comment)	
☐ Project information	
☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	
☐ Air sample container(s) compromised (comment)	
□ Flat	
☐ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
☐ Leaking (transferred into ECI Tedlar™ bags*)	
☐ Leaking (transferred into client's Tedlar™ bags*)	
* Transferred at client's request.	
MISCELLANEOUS: (Describe)	Comments
HEADSPACE:	
(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)	(Containers with bubble for other analysis)
ECI ECI Total ECI ECI Total Sample ID Container ID Number** Sample ID Container ID Number**	ECI ECI Total Sample ID Container ID Number** Requested Analysis
1 C 3	23 P 1 Ferrous Iron
3 I 3	
Comments:	100
	Reported by: 1017
** Record the total number of containers (i.e., vials or bottles) for the affected sample.	Reviewed by:





WORK ORDER NUMBER: 16-07-0972

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/27/2016 by:

Richard Villafania Project Manager



ResultLink ▶

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FV
Client Project Name:	3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.F\

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	3.2 EPA 314.0 Perchlorate (Aqueous)	6
	3.3 EPA 8330 Nitroaromatics and Nitramines (Aqueous)	7
	3.4 EPA 350.1 Ammonia (Aqueous)	11
	3.5 SM 4500 H+ B pH (Aqueous)	12
	3.6 EPA 8015B (M) C8-C40 (Aqueous)	13
	3.7 EPA 8015B (M) TPH Gasoline (Aqueous)	15
	3.8 EPA 1625C (M) NDMA (Aqueous)	16
	3.9 EPA 8270C SIM (Aqueous)	18
	3.10 EPA 8260B Volatile Organics (Aqueous)	20
	3.11 EPA 8260B SIM Emergent Volatiles (Aqueous)	35
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Work Order Narrative

Work Order: 16-07-0972 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/14/16. They were assigned to Work Order 16-07-0972.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-0972

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers: 07/14/16 19:30 64

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
RD05CGW01S006	16-07-0972-1	07/14/16 09:30	20	Aqueous
SP882GGW01S005	16-07-0972-2	07/14/16 12:00	8	Aqueous
WS04AGW01D006	16-07-0972-3	07/14/16 09:45	18	Aqueous
WS04AGW01S006	16-07-0972-4	07/14/16 09:45	18	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-0972				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	1063	GC 25	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-0972 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record COC Number:	ber: CALS07141602	_	CH2M HILL 7/14/20	7/14/2016 2:41:04 PM F	Page 1 of 4 15-0/-0
Project Name SSFL Location Santa Su Task Order 614 Project: 3Q2016 SA/PCP & AIG Project Number 666267.14.Q3.FW	Susana Field Lab IG GWS				
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	70-5084			SW826	
Turnaround Time 10 Days PO Number 100067103941			SW801 SW68 71625M- 14500NH E314 8270CS	SW833 50BSIM- SW826 SW8015	SW90
Sample ID Sample Date/Time	Type Matrix	# Containers Preserv	50 LL 3F .1	LL OB -P	40
RD05CGW01S006 14-Jul-16 9:30	30 N Water				
1,4-Dioxane LL	Field Filtered:	3 HCL pH<24C		S	
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered:	2 4'C		3	
Fluoride, Nitrate	Field Filtered:	1 4'C			
Ammonia	Field Filtered:	1 H2SO4, pH<2, 4'C			
NDMA - LL	Field Filtered:	2 4'C			
Perchlorate	Field Filtered:	1 4'C			
Perchiorate - HOLD	Field Filtered:	1 4'C			
Hd	Field Filtered:	1 4'C			
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C			
VOCs full list	Field Filtered:	3 HCL pH<2 4C		□ □ •	
Report Carbon Ranges	Field Filtered:	3 HCL pH<2 4C			
	Total Containers:	iners: 20			
THE PROPERTY OF THE PROPERTY O	A CANADA MANAGA		A CONTRACTOR OF THE CONTRACTOR	The second secon	projector, kojemi primi krismerne arekina zamentra kundanokam danman ajamak minosan jama jaman danman baken ke Interpretak

Θ

CH582 PO: 100067101891 CH614 PO 100067103941 Jon Freed (208) 660-4929 Special Instructions: Report Copy to Sample Custody Michele Castro ATTN: and FedEx Shipping Details (9.30) | Lab Name: CalScience | 19.30 | Lab Phone: (949) 870-8766 Method of Shipment: On Ice: yes / no 1600 Airbill No: Date/Time 07146 MS = Matrix Spike SD = Matrix Spike Duplicate B 四日 Relinquished by Relinquished by Received by Approved by Received by Sampled by



9

Page 2 of 4

7/14/2016 2:41:04 PM

CH2MHILL

	Chain of Custody Record COC Number: CALS07141602	Ü	CHZMHIL	7/14	7/14/2016 2:41:05 PM	2:41:0	15 PM	g.	Page 3 of 4	75/20
	Project Name SSFL Location Santa Susana Field Lab Task Order 614 Project: 3Q2016 SA/PCP & AIG GWS Project Number 666267.14.Q3.FW				4474	ware to the same of the same o	S			
	Sample Manager Jamie Beckett (530) 570-5084		SM	SW			w826			
	Turnaround Time 10 Days		82700	SW6 116251	SW8	SW82	OBSIN	SW83	QWQ	**************************************
	Sample Date/Time Type Matrix # Containers	Preserv	14.1	5850 1-LL			1-LL		9040	
(D)	3 WS04AGW01D006 14-Jul-16 9:45 N Water									
1	Field Filtered: 3	HCL pH<2 4C					>	H		
	Nitrobenzene, 1,3-dinitrobenzene Field Filtered: 2 4'G	4'C						S		
	Fluoride, Nitrate 1 4'C	4'C								
	Ammonia Field Filtered: 1 H2SO4, pl	H2SO4, pH<2, 4'C								
	NDMA - LL Field Filtered: 2 4'0	4'C		☐ >						
	ind. Pthalates Field Filtered: 2 4'0	4'C	<u> </u>							
	Perchlorate Field Filtered: 7 4'0	4'C								
	Perchlorate - HOLD Field Filtered: ✓ 1 4'0	4'C		<u>S</u>						
	Report Carbon Ranges incl. EFH C8-C30 Total Field Filtered: 2 4'0	4'C			S					
	VOCs full list HCL pH	HCL pH<2 4C				3				
	Total Containers:	18								

	Special Instructions:	CH582 PO: 100067101891	148601 100001 01 41010	Report Conv to	Jon Freed	(208) 660-4929		
		ATTN:	Sample Custody	and	Michele Castro			
	Shipping Details	Method of Shipment: FedEx	On Ice: yes / no	Airbill No:	(ရှ.၁၂ Lab Name: CalScience	07(山) (436) Lab Phone: (949) 870-8766		
	Date/Time	0091 3//1/1	1	10091 11/m/t	7/14/1/4 18.30	071416 1930		
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures.	Mad Car	Just Cir	B	1			
MS = Matrix Spike		Approved by	Sampled by Relinquished by	Received by	Relinquished by	Received by		\



Project Name SSFL Location Santa Susana Field Lab Frask Counter Name SSFL Location Santa Susana Field Lab Frask Containers Field Lab Froject Name Section Field Filtered 190067103941 Field Filtered 190067103	Chain of Custody Record	ord COC Number:	oer: CALS07141602	U	CH2MHILL	7/14/2016 2:41:05 PM	11:05 PM	Page 4 of 4	9	0972
Market 100 1	37.	302								
14-7ul-16 Sample Date/Time Type Matrix # Containers Preserv 14-7ul-16 9:45 N Water 14-7ul-16	Project Manager Jeremy Hilliard Sample Manager Jamie Beckett		0-5084				SW826			
Sample DaterTime Type Matrix # Containers Presery 0 MI 1 MI 1 MI 1 MI 1 MI 1 MI 1 MI 1 MI	Turnaround Time 10 Days PO Number 100067103941				E314 8270CS	SW8015	OBSIM-1			
14-Jul-16 9:45 N Water Field Filtered: 3 HCL pH<24C C C C C C C C C C	Sample ID	Sample Date/Time			3F .1 IM	5B 50	LL			
Field Filtered: 3 HCL pH<24C	WS04AGW01S006		z				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Field Filtered: 1 4°C	1,4-Dioxane LL						S			
Field Filtered: 1 4°C	Nitrobenzene, 1,3-dinitrobenzene		$\ $	And the second s						
Field Filtered: 1 H2SO4, pH<2, 4°C	Fluoride, Nitrate		Field Filtered:	4'C	<u> </u>					
Field Filtered: 2 4°C	Ammonia	A TOTAL CONTRACTOR OF THE PROPERTY OF THE PROP		H2SO4, pH<2, 4'0						
Field Filtered: 2 4°C C	NDMA - LL	The state of the s								
Field Filtered: ▼ 1 4°C □ ▼ □	incl. Pthalates									
Field Filtered: 1 4°C □	Perchlorate		Field Filtered:	4'C	S					
Field Filtered: 2 4'C 0	Perchlorate - HOLD		Field Filtered:	4'C						
Field Filtered: 3 HCL pH<24C	Report Carbon Ranges incl. EFH C8-C3	0 Total				S				
	VOCs full list						S			
	AND THE PROPERTY OF THE PROPER		Total Contain							



Return to Contents

WORK ORDER NUMBER: 16-07age 64 F62

Calscience

SAMPLE RECEIPT CHECKLIST COOLER 1 OF 2

CLIENT: _	CH2M HiL	DATE:	07/14	/ 2016
Thermome Sam Sam Sample	ATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) eter ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 ple(s) outside temperature criteria (PM/APM contacted by:) ple(s) outside temperature criteria but received on ice/chilled on same day of sampli(s) received at ambient temperature; placed on ice for transport by courier emperature: Air Filter	ing	lank □ Sar	
CUSTODY Cooler Sample(s)	☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/		hecked by: _	
Chain-of-C	CONDITION: Custody (COC) document(s) received with samples Iment(s) received complete Ipling date Sampling time Matrix Number of containers	عر	es No d	N/A
☐ No a Sampler's Sample co Sample co Proper co Sufficient	analysis requested Not relinquished No relinquished date No relinquished name indicated on COC Intainer label(s) consistent with COC Intainer(s) intact and in good condition Intainers for analyses requested Volume/mass for analyses requested received within holding time			
Aqueon pH Proper pro Unpres	us samples for certain analyses received within 15-minute holding time □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen esservation chemical(s) noted on COC and/or sample container served aqueous sample(s) received for certain analyses atile Organics □ Total Metals □ Dissolved Metals			
Container Vola	trick) for certain analysis free of headspace			<u> </u>
CONTAIN Aqueous 125PB: 500PB Solid: 4	Canister Canister Sorbent Tube PUF Canister Number: ☐ 125AGE 500AGJ ☐ Cores® (): ☐ _	3p 2 125PE		
Container: Preservati	: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Zipve: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOH, na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₄ , s = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOH	Labeled/	Checked by: Reviewed by:	679 178/105

WORK ORDER NUMBER: 16-07 age 600 763

Calscience

SAMPLE RECEIPT CHECKLIST COOLER 2 OF 2

CLIENT: CH2MHiu	DATE: U/	1 19	/ 2010
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7 °C (w/	9	□ Sam	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	Check Check	ed by: _	804 659
Sample(s) Present and Intact Present but Not Intact Not Present NA			
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes Þ	No	N/A
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers ☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished to	time		
Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested	d d d		
Sufficient volume/mass for analyses requested	<u> </u> <u>-</u>		
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container	🗆		<u></u>
Unpreserved aqueous sample(s) received for certain analyses ☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace ☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)	d		
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation			₽.
CONTAINER TYPE: Aqueous: VOA VOAh VOAna2 100PJ 100PJna2 125AGB 125AGBh 125PBznna 250AGB 250CGB 250CGBs 250PB 250PBn 500AGB 500AGB 500PB 1AGB 1AGBna2 1AGBs 1PB 1PBna 1PBn	125AGBp Z 0AGJ □ 50 ores® (): □ oc/Resealable abeled/Chec	125PB 0AGJs □) □ Bag	619



Calscience



WORK ORDER NUMBER: 16-07-1078

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/27/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Work Order Number: 16-07-1078

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 RSK-175M Carbon Dioxide (Aqueous). 3.2 RSK-175M Dissolved Gases (Aqueous). 3.3 EPA 300.0 Anions (Aqueous). 3.4 SM 2320B Alkalinity (Aqueous). 3.5 SM 2320B Alkalinity (Aqueous). 3.6 SM 2510 B Specific Conductance (Aqueous). 3.7 SM 2540 C Total Dissolved Solids (Aqueous). 3.8 SM 3500-FeB Ferrous Iron (Aqueous). 3.9 SM 4500 S2 - D Sulfide (Aqueous). 3.10 SM 5310 B Total Organic Carbon (Aqueous). 3.11 EPA 8015B (M) C8-C40 (Aqueous). 3.12 EPA 8015B (M) TPH Gasoline (Aqueous). 3.13 EPA 6020 ICP/MS Metals Scan Total (Aqueous). 3.14 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous). 3.15 EPA 1625C (M) NDMA (Aqueous). 3.16 EPA 504.1 EDB and DBCP (Aqueous). 3.17 EPA 8260B Volatile Organics (Aqueous). 3.18 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 7 9 10 11 12 13 14 15 16 19 21 24 27 29 30 48
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 Sample Duplicate. 4.4 LCS/LCSD.	50 50 60 61 68
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6	Glossary of Terms and Qualifiers	88
7	Chain-of-Custody/Sample Receipt Form	89



Work Order Narrative

Work Order: 16-07-1078 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/15/16. They were assigned to Work Order 16-07-1078.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1078

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

PO Number: Montgomery, AL 36106-2801

> Date/Time 07/15/16 18:45

Received:

Number of 133

Containers:

Jeremy Hilliard Attn:

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2445Q001	16-07-1078-1	07/15/16 07:00	9	Aqueous
EBQW2176Q001	16-07-1078-2	07/15/16 13:00	31	Aqueous
HAR05GW01S006	16-07-1078-3	07/15/16 10:00	31	Aqueous
HAR06GW01S002	16-07-1078-4	07/15/16 12:00	31	Aqueous
RD47GW01S003	16-07-1078-5	07/15/16 09:45	31	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1078				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	1063	GC 25	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 61	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2320B	N/A	650	PH1/BUR16	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



SG

Glossary of Terms and Qualifiers

Work Order: 16-07-1078 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
	Greater than the indicated value.
>	
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

X % Recovery and/or RPD out-of-range.

The sample extract was subjected to Silica Gel treatment prior to analysis.

- Z Analyte presence was not confirmed by second column or GC/MS analysis.
 - Solid Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record		COC Number: CALS07151602	Ü	CHZMIIL	1	5/2016	7/15/2016 1:31:02 PM	2 PM	Pa	Page 1 of 9	6		6		
roject Name SSFL ask Order 582 Project: 3Q2 Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB ny Hilliard	Susana Field Lab G GWS					S	SW	SW			SW8			
sample Manager Jamie Beckett urnaround Time 10 Days	(530) 570-5084	5084	300	E376	RSK1	SM254	SW1625M-	6010B/60	16010F/60 SW601	SW801	SW826	260BSIM-	SW90	SW9(
Sample ID S	Sample Date/Time	Type Matrix # Containers P	Preserv 0.0	5.2				020		L5B)50)60	
2AQW2445Q001	15-Jul-16 7:00	N Water													
1,4-Dioxane LL	,	Field Filtered: 3 HCL	HCL pH<2 4C		Н							>			
VOCs full list		Field Filtered: 3 HCL	HCL pH<2 4C								<u>></u>				
Report Carbon Ranges		Field Filtered: 3 HCL	HCL pH<2 4C								<u> </u>				
		Total Containers:	6		_										

MS = Matrix Spike	SD = Matrix Spike Duplicate	ð			
	Signatures	Date/Time	Shipping Details	-	Special Instructions:
Approved by	Motel Cluis	7/15/16 1600	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	MITTER CUM		On Ice: yes / no	Sample Custody	CH614 PO 10006/103941
Received by		7/15/16 16 o Airbill No:	Airbill No:	and	Renort Copy to
Relinquished by		11/51/C	7/15/16 (Rug Lab Name: CalScience	Michele Castro	Jon Freed
Received by	DECEMBER OF THE	1/2//te	Lab Phone: (949) 870-8766		(208) 660-4929

Approved by
Sampled by
Relinquished by
Received by
Relinquished by

Relinquished by Received by

Chain of Custody Record	Record	COC Number:	CALS07151602	51602		CH2MHILL	Ξ	=		115/2	016	7/15/2016 1:31:02 PM	12 PN		Page	2 of	တ				3	27.0	/
Project Name SSFL Task Order 582 Project: Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	302	Location Santa Susana Field Lab	sana Field Lat. 3WS 084								SHO		SW601	, , , , , , , , , , , , , , , , , , , 	SW603			310200	cm9266	NAME OF THE OWNER, AND ADDRESS OF THE OWNER,			
Turnaround Time 10 Days PO Number 100067101891						300.0	A2320B 504.1	E376.2	RSK175	RSK175M	500-Fe-D SM2540C	1625M-LL	10B/6020	SW6010F	10F/6020	SW8015B	SW8015-P	SW8260B	SW9050 BSIM-LL	SW9060			
Sample ID	Sample	Sample Date/Time 1	Type Matrix	# Containers	ainers Preserv					-	-	-				\dashv	+	+	+			_	
EBQW2176Q001	15-Jul-16	16 13:00	N Water																				
Alkalinity			Field Filtered:	<u></u>	1 4'C		>																_
002	W. W. W. W. W. W. W. W. W. W. W. W. W. W		Field Filtered:	t: [2 4'C					<u>></u>							H	H					4
1,4-Dioxane LL			Field Filtered:		3 HCL pH<24C														<u> </u>				
Methane, ethane, ethene		THE RESERVE TO SERVE THE PARTY OF THE PARTY	Field Filtered:	1: 3	3 HCL pH<2 4C				>							Ħ	Ħ	H					1
Ba, B, Ca, Mg, K, Na, Sr	PAPER TO A CALL		Field Filtered:	<u>;</u>	HN03, 4'C										>		H						
Mn	Control of the Contro	And the second s	Field Filtered:	<u>></u>	I HN03, 4'C									>					H				/ <u> </u>
Ferrous Iron			Field Filtered:	<u> </u>	4'C						>												(
SO4, CI, NO3, F			Field Filtered:		1 4'C	3				H							H	H					(
Conductivity	Andrews of the party of the par		Field Filtered:		1 4'C												H		>				ı
Sulfide		***************************************	Field Filtered:		1 NaOH, ZnAc, 4'C			3			님												
100			Field Filtered:	J.F.	1 H2SO4, pH<2, 4'C	4'C					H						H			3			·
Ba, B, Ca, Mg, K, Na, Sr			Field Filtered:		1 HNO3, 4'C						H		>				H	H					4
NDMA - LL			Field Filtered:[2 4'C						H	>											
MS = Matrix Spike SD = N	SD = Matrix Spike Duplicate	plicate	BANGS AND THE STREET																TO THE PERSON NAMED IN			consistent manifestor.	ı
My my ponozony	Signatures	Deal Control	ate/Time		Shippin	Shipping Details						.4	ATTN		0,	Spec	la:	nstrı	Special Instructions:	ns:			ı
Sampled by	to Clin	7/15	20	Method	0	FedEx	Ų				,				***************************************	CH2	32 P 14 P 17 P	;; ;;;	9000	CH582 PO: 100067101891 CH614 PO 100067103941	891		
Relinquished by	tel Clin	2//L	5/16 1600		yes / no						,	Sample Custody	SCE	itody									
Received by	1	2/18	91 31/3	Alroill NO.	ro. me: CalScience	ą							and			Repo	Report Copy to	opy	\$				
Received by	KALL &	en 7/15/16	1845	Lab Phone:		-8766					_	Michele Castro	e Ca	stro			_	Jo (208)	Jon Freed 38) 660-49	Jon Freed (208) 660-4929	•		



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Chain of Custody Record	COC Number: CALS07151602	CH2MHILL	CH2MHILL 7/15/2016 1:31:02 PM	Page 3 of 9	(10.73
Project Name SSFL Location Santa Stask Order 582 Project: 3Q2016 SA/PCP & AlG Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-furnaround Time 10 Days	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084	E376 A232 504 300	SW6010B/601 SW1625M-1 SM3500-Fe SM254 RSK17	SW901 SW8260BSIM-1 SW8260 SW8015- SW8011 SW6010F/600	SW90
Sample ID Sample	Sample Date/Time Type Matrix # Containers	.2 0B	20 LL -D 0C 5M	LL 0B -P 5B	
TDS	Field Filtered: 1	4'C			
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: ☐ 2	4'C			
VOCs full list	Field Filtered: 3 HCL	HCL pH<2.4C		S	
EDB/DBCP	Field Filtered: 3 Na2	Na2S203, 4'C 🗸			
Report Carbon Ranges	Field Filtered: 3 HCL	HCL pH<2.4C			
	Total Containers:	31			

	Special Instructions:	CH582 PO: 100067101891	CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929
		ATTN:		Sample Custody	and	Michele Castro	
	Shipping Details	Method of Shioment: FedEx		On Ice: yes / no	Airbill No:	Lab Name: CalScience	ECL HIS/18 1841 Lab Phone: (949) 870-8766
ate	Date/Time	7/15/16 1600		7	7/15/16 160	2/15/16 18VS	Shirtle 184
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures	Metal Cleri	Metal Clair	Mit ain		The state of the s	Shange en
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by

Special Instructions:

Shipping Details

Date/Time

Relinquished by

Approved by

Sampled by

Relinquished by

Received by

Received by

CH582 PO: 100067101891		Report Copy to	Jon Freed	(208) 660-4929		
ATTN:	Sample Custody	and	Michele Castro			
7/15/16 1600 Method of Shipment: FedEx	On ice: yes / no	Airbill No:	Lab Name: CalScience	L 222 4 15/16 1845 Lab Phone: (949) 870-8766		
2/10 1600	7	7/15/16 160 Air	Shall III	116 1897	-	
7	Z	115	12/16	がん	,	
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Return to Contents

Chain of Custody Record COC Number:	nber: CALS07151602	ວ	CH2MHILL	Ī		7/15,	2016	7/15/2016 1:31:02 PM	2 PM		age 1	Page 4 of 9		No. of Contract of		8601	(20)	
Project Name SSFL Task Order 582 Project: 3Q2016 SA/PCP & AIG Project Number 654377.82.LB	a Susana Field Lab																	
	(530) 570-5084								SW60		SW60			SW826			~~~~~	
Turnaround Time 10Days PO Number 100067101891			300	A232	RSK1	RSK17	SM254	1625M-1 500-Fe	10B/60	SW601	SW801	SW8015-	SW826	OBSIM-	SW90	SW90		
Sample ID Sample Date/Time	ne Type Matrix #Containers	rs Preserv		0в					20	0F			0в	LL		60		
HAR05GW01S006 15-Jul-16 10:	10:00 N Water																	
Alkalinity	Field Filtered: 1	4'C		<u>></u>												П.		
002	Field Filtered: 2	4'C				>												
1,4-Dioxane LL	Field Filtered: 3	HCL pH<2 4C												>				
Methane, ethane, ethene	Field Filtered: 3	HCL pH<2 4C			<u>S</u>													1—1
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 🗸	HN03, 4'C									<u>></u>							
Mn	Field Filtered: 🗸	HN03, 4'C								>							H	tal
Ferrous Iron	Field Filtered:	4'C						<u> </u>										
SO4, Cl, NO3, F	Field Filtered:	4'C	\															
Conductivity	Field Filtered:	4°C													<u>></u>			
Sulfide	Field Filtered:	NaOH, ZnAc, 4'C			S													
T0C	Field Filtered: 1 H	H2SO4, pH<2, 4'C														<u>></u>	片	
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	HNO3, 4'C							>									
NDMA - LL	Field Filtered: 2	4'C						<u>5</u>										
MS = Matrix Spike SD = Matrix Spike Duplicate											-							



Chain of Custody Record COC Number	lumber: CALS07151602	ō	CH2MHILL 7/15/2016 1:31:02 PM	I ⊒	1/1	5/2016	1:31.0	12 PM	Ра	Page 5 of 9	f 9		\bigcirc	8/03/8	100
Project Name SSFL Location Santa Sura Sura Sura Carata Car	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084		504.3 300.0	E376.2	RSK175M	SM25400	SW1625M-LI SM3500-Fe-I	SW6010B/6020	SW6010F/6020 SW6010F	SW8015E	SW8015-F	SW8260BSIM-LI SW8260E	SW9050	SW9060	
Sample ID Sample Date/Time	Time Type Matrix # Containers	Preserv	L			3	-)		3))	i i i i i i i i i i i i i i i i i i i
TDS	Field Filtered:	4'C				>									
Report Carbon Ranges ind. EFH C8-C30 Total	Field Filtered: 2	4'C								>					
VOCs incl. Isopropyl Alcohol	Field Filtered: 3	HCL pH<2 4C													
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C	S												
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C									>				
	Total Containers:	31													
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				ALEMANDA PROPERTY OF THE PROPE	A CONTRACTOR OF THE PROPERTY O
MS = Matrix Spike	SD = Matrix Spike Duplicat	9.		WITTERWEIGHT - The state of the	
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Matel Cleri	7/15/16 1600	1/5/16 1600 Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Mans Com		On Ice: ves / no	Vanda Catady	CH614 PO 100067103941
Relinquished by	Mit Clis	a >	Airbill Mc.	Campie Castory	
Received by	\forall	7/15/14 160 AIIDIII 190.	All Dill NO.	and	Report Copy to
Relinquished by	A	5481 71/5116	Lab Name: CalScience	Michele Castro	Jon Freed
Received by	SACULT SE	7115116 18:30	12 7/15/16 18:45/Lab Phone: (949) 870-8766		(208) 660-4929



Location Santa Susana F Project: 3Q2016 SA/PCP & AIG GWS 4377.82.LB Incomplete	15-Jul-16 12:00 Nature Field Filtered 1 10-2040 15-Jul-16 12:00 Nature Field Filtered 1 10-2040 1 10		Chain of Custody Record cod	COC Number: CAI	CALS07151602	2	U	Ĭ	CH2MHILL	1		15/20:	7/15/2016 1:31:02 PM	1:02 }	Mc	Page	e 6 of	6 Ja			\tilde{C}	3/03/	$/\infty$
100 ays 100	100 ays 15-Jul-16 12:00 N Water 12:00		SFL Broject: 3Q2 654377.82.LB Jeremy Hilliard Jamie Beckett	Santa Susana F P & AIG GWS 330) 570-5084	ield Lab							AMARAM MARINE TO THE STATE OF T	SM35		CW CO 1	SW601		C	5W0200	CMO 2 C			APPOINT TO THE PROPERTY OF THE
Sample Date/Time Type Matrix # Containers Preserv 0 1 1 1 1 1 1 1 1 1	Sample Date/Time Type Matrix # Containers Preserv 0 1 10 10 10 10 10 10		90					300.					500-Fe-				SW8015	SW8015-		~~~~		W.W.	
Field Filtered: 1	15-Jul-16 12:00 N Water			Type	1	ntaine		0					D				В	P		<u> </u>			
Field Filtered: 1	Field Filtered: 1 4°C	3		z	Water												***********						
Field Filtered: 2	Field Filtered: 2	•	Alkalinity	Field	1 Filtered:	_	4'C		>														
Field Filtered: 3 HCL pHc24C	Field Filtered: 3 HCL pH-24C		002	Field	1 Filtered:	2	4'C																
State Fleid Filtered: 3 HCL pHc24C	Field Filtered: 3 HCL pHc24C		1,4-Dioxane LL	Field	1 Filtered: □	3	HCL pH<2 4C																
Field Filtered:	Field Filtered; 1		Methane, ethane, ethene	Field	1 Filtered: □	3	HCL pH<2 4C				>												
Field Filtered: 1	Field Filtered:		Ba, B, Ca, Mg, K, Na, Sr	Field	1 Filtered:✓	-	HNO3, 4'C									2							
Fleid Filtered: 1 4°C	Field Filtered: 1		Mn	Field	1 Filtered:▼	_	HNO3, 4'C								>								
Field Filtered:	Field Filtered:		Ferrous Iron	Field	1 Filtered:▼	_	4'C						5						H				
Field Filtered:	Field Filtered:		SO4, CI, NO3, F	Field	1 Filtered: □	-	4'C	3															
Field Filtered:	Field Filtered:		Conductivity	Field	d Filtered:	-	4'C																
Field Filtered:	Field Filtered: 1 H2SO4, pH<2, 4°C		Sulfide	Field	1 Filtered:		NaOH, ZnAc, 4'C			>													
State Field Filtered: 1	Standard Signatures Field Filtered: 1		100	Field	d Filtered: ☐		12SO4, pH<2, 4'C														<u>></u>		
SD = Matrix Spike Duplicate Shipping Details ATTN: Signatures Date/Time Shipping Details ATTN: Method of Shipment: FedEx FedEx Method of Shipment: FedEx ATTN: Airbill No: Aribill No: and Airbill No: Airbill No: Airbill No: Alighter (R) Airbill No: Alighter (B) Airbill No: Alighter (B) Airbill No:	SD = Matrix Spike Duplicate Signatures Signatures Date/Time Shipping Details ATTN: Muthod of Shipment: FedEx On Ice: yes / no Z/15/16 18 45 Date/Time Shipping Details ATTN: ATTN: And ANichele Castro Michele Castro		Ba, B, Ca, Mg, K, Na, Sr	Fielo	d Filtered:	_	HNO3, 4'C																
SD = Matrix Spike Duplicate Signatures Date/Time Shipping Details ATTN: Method of Shipment: FedEx On Ice: yes / no and And Lab Name: CalScience Michele Castro Michele Castro	SD = Matrix Spike Duplicate Signatures Date/Time Shipping Details Method of Shipment: FedEx On Ice: yes / no ATTN: ATTN: ATTN: ATTN: ATTN: ATTN: ATTN: ATTN: ATTN: ANichele Castro Michele Castro		NDMA - LL	Field	d Filtered: □	2	4'C							3					H				
I by The Carlo of Shipment: FedEx ATTN: Method of Shipment: FedEx ATTN: Annual Carlo on Ice: yes / no On Ice: yes / no Annual No: A	Interpretation of Shipment: FedEx Method of Shipment: FedEx Method of Shipment: FedEx Sample Custody On Ice: yes / no and On Ice: yes / no and On Ice: yes / no On Ice: y				94		Table of the state			AND STREET STREET, STR							0			190			
d by My Lab Name: CalScience Airbill No: and	d by Maria Cost of the sample Custody and Airbill No: and Airbill No: A by Michele Castro A by Michele Castro A by Michele Castro A sample Custody A		Mit		1600	od of	Shipment:	FedE	a ×					ATTI	Ë		CH5	82 P	0.00	9006	71018 1039	391	
Report C Michele Castro Report C Michele Castro Report C Michele Castro Report C Michele Castro			Relinquished by		>	e: ×	es / no						San	nple C	Sustoc	φ	5		2			:	
			Received by Relinquished by Received by	15/16 5/16 7/16	16 5 25 5 25 5 25 5 25 5 25 5 25 5 25 5 2	Name: Phone	CalScience : (949) 870-8	99/					Mic	Shele	Castr	,	Rep	ort	opy Joi (208)	to n Fre 660	ed 4929	_	



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Chain of Custody Record COC Number:	oer: CALS07151602	U	CH2MHILL	- 1	2016 1	7/15/2016 1:31:03 PM		Page 7 of	7 of 9			\forall	1018	13	1
Project Name SSFL Location Santa Susana Field Lab	Susana Field Lab														
Task Order 582 Project: 3Q2016 SA/PCP & AIG	G GWS							******							
Project Number 654377.82.LB															
Project Manager Jeremy Hilliard					-			SI			SW				
Sample Manager Jamie Beckett (530) 570-5	0-5084				5M3	SW		w 60			326				
Turnaround Time 10Days						162									
PO Number 100067101891			376 2320 504	K175	-Fe-	/602 5M-1	6010	/602	015-	8260	W905	W906			
Sample ID Sample Date/Time	Type Matrix # Containers	s Preserv)B .1			J.									
TDS	Field Filtered:	4'C			3										
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C													
VOCs full list	Field Filtered: 3	HCL pH<2 4C								>					
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C	 												
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C							<u>></u>						
	Total Containers:	31													

MS = Matrix Spike	SD = Matrix Spike Duplicate		
	Signatures	Date/Time	Shipping Details
Approved by	Motel Clisic	2/15/16 1600	7/15/16 1600 Method of Shinmant: FedEx
Sampled by	Mits Clea		
Relinquished by	Most Cer	≫ →	On ice: yes / no
Received by	*	7/15/16 160	Airbiii No:
Relinquished by	7	7/15/16 1845	Lab Name: CalScience
Received by	DANNYL EN	HISTIG (RICH)	Monthly tar April (P.4) Lab Phone: (949) 870-8766

CH582 PO: 100067101891 CH614 PO 100067103941

Sample Custody

ATTN:

Special Instructions:

Report Copy to Jon Freed (208) 660-4929

and Michele Castro

	Chain of Custody Record coc	COC Number: CALS07151602	602	7	CH2MHILL	2	I	긜	//	15/20	161	7/15/2016 1:31:03 PM	3 PM		Page	8 of	<u>ဂ</u>			U	51	1048
	Project Name SSFL Location Santa Su Task Order 582 Project: 3Q2016 SA/PCP & AIG Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-17 Turnaround Time 10 Days	Santa Susana Field Lab CP & AIG GWS (530) 570-5084		j.	30		A23	E37	RSKI	SM25 RSK1	SM3500-F	SW1625M	SW6010B/6	SW60	SW6010F/6	SW801 SW80	SW82	SW8260BSIM	SW9	SW9		
	Sample ID Sample Date/Time	Type Matrix #	Containers	ners Preserv	0.0	4.1					·		020	10F					050	060		
(\mathcal{P})	RD47GW01S003 15-Jul-16	9:45 N Water																ļ	ļ			
(Alkalinity	Field Filtered:	-	4'C			<u>S</u>		H	H							H					
	002	Field Filtered:	2	4'C						5												
	1,4-Dioxane LL	Field Filtered:	3	HCL pH<2 4C						H								>				
	Methane, ethane, ethene	Field Filtered:] 3	HCL pH<2 4C					<u>S</u>	H												
	Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	-	HNO3, 4'C											>							
	Mn	Field Filtered:	-	HNO3, 4'C										>								
	Ferrous Iron	Field Filtered:	-	4'C							<u>></u>											
	SO4, CI, NO3, F	Field Filtered:	-	4'C	>																	
	Conductivity	Field Filtered:	_	4'C															>			
	Sulfide	Field Filtered:] 1	NaOH, ZnAc, 4'C]:]:			2														
	100	Field Filtered:	1	H2SO4, pH<2, 4'C	4.C				H											>		
	Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	_	HNO3, 4'C									2			П						
	NDMA - LL	Field Filtered:] 2	4'C				H	H	붜	H	2					H	빔				
	MS = Matrix Spike SD = Matrix Spike Duplicate	et.																				
	Signatures	a/Time		Shipping Details	3 Detai	<u>s</u>									S	Special Instructions:	la L	struc	ction	:;		
	Approved by	- 7/15/16 1600 Me	thod	Method of Shipment:	FedEx	ŭ						F	ATTN:		υC	CH582 PO: 100067101891	2 PO	100	7900	100067101891	191	
	Sampled by Mttd (19)	o or	On Ice:	yes / no							Š	Sample Custody	Cus	stody) -	3	2	600	_	
	Received by	7/15/16 16 " All	Airbill No:									w	and		Ľ	Report Copy to	S	by to	o			
	Relinquished by	5481 97	Lab Name: Lab Phone:	ne: CalScience ne: (949) 870-8766	e -8766						2	Michele Castro	le Ca	ıstro		<u> </u>	: 0	Jon Freed (208) 660-4929	Jon Freed 08) 660-49	1929		
	Received by	1/10/10 (8 m)						٠		-							Ļ					

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Chain of Custody Record	COC Number: CALS07151602	CH	CH2MHILL	1	2016 1	7/15/2016 1:31:03 PM		Page 9 of 9	of 9			0	360
Project Name SSFL Location Santa Susana Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10 Days	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084		E376 A232 504 300	RSK17	SM3500-Fe SM254	SW6010B/60 SW1625M-	SW601	SW801 SW6010F/60	sw8015	SW8260BSIM-	SW90	SW90	
Sample ID Sample I	Sample Date/Time Type Matrix # Containers	Preserv	0B .1			LL					50	60	
) TDS	Field Filtered:	4'C			5								
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C						S					
VOCs full list	Field Filtered: 3 H	HCL pH<2 4C								S			
EDB/DBCP	Field Filtered: 3 N	Na2S203, 4'C	 										
Report Carbon Ranges	Field Filtered: 3 H	HCL pH<2 4C							<u> </u>				
201000000000000000000000000000000000000	Total Containers:	31											

MS = Matrix Spike	SD = Matrix Spike Dupli	cate			
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mater (Max	00/ 01/5//	7/15/16 1600 Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	MON Chi	,			CH614 PO 100067103941
Relinquished by	Muty Cli	>	Oil Ice. yes / IIO	sample Custody	
Received by	Ø	7/15/16 16 0 Airbill No:	Airbiil No:	and	Report Copy to
Relinquished by	2	0115/16 1845	7/15/16 1845 Lab Name: CalScience	Michele Castro	Jon Freed
Received by	DAMARY SES	HIG 875	Lab Phone: (949) 870-8766		(208) 660-4929
	7				

WORK ORDER NUMBER: 16-07-

cience

SAMPLE RECEIPT CHECKLIST

COOLER		OF	2
	_		

CLIENT: CHLM H.U	DATE: 07	1151	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF	I	⊡ Samp ed by:ൃ	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		ed by: <u>{</u> ed by: <u></u> {	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	/2	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished to Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			00000
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses		<u> </u>	<u>a</u>
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		Ø	□ ~
Tedlar™ bag(s) free of condensation CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 1 □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PB □ 500AGB □ 500 □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ 250PB □ □ □ Solid: □ 40zCGJ □ 80zCGJ □ 160zCGJ □ Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	mber:	0AGJ s □ Bag ked by: _ S	

Calscience

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST

CC	OL	ER	7	O	F 2
				•	

CLIENT:	CH21V)	H.U		C	ATE: 07	115	/ 201 6
Thermometer ID: SC1B ☐ Sample(s) outside ☐ Sample(s) outside	(CF: 0.0°C); T temperature c temperature c t ambient temp	0°C, not frozen except sed emperature (w/o CF): riteria (PM/APM contacted riteria but received on ice/ perature; placed on ice for	3. <u>2</u> °C (w/ CF): d by:) chilled on same day o			□ Sam ed by:	
CUSTODY SEAL:	t and latest	D Present but Not Intest	Not Present	□ N/A	Check	ed by:	811)
	t and Intact t and Intact	☐ Present but Not Intact ☐ Present but Not Intact		□ N/A		ed by: <u>7</u>	
COC document(s) recei	ved complete	received with samples e □ Matrix □ Number of			•	No	N/A
☐ No analysis reque Sampler's name indicate	sted □ Not reed on COC	elinquished No relinqui	shed date 🛚 No reli		🗷		
Sample container(s) inta Proper containers for an	act and in good alyses reques	conditiontedquested			d d	_ _ _	
Samples received within Aqueous samples for	n holding time r certain analys	ses received within 15-min	ute holding time	, , , , , , , , , , , , , , , , , , , ,	🗹		
Proper preservation che Unpreserved aqueou	mical(s) noted s sample(s) re	on COC and/or sample coceived for certain analyses S Dissolved Metals	ontainer				
Container(s) for certain	analysis free o □ Dissolved (f headspace	olved Oxygen (SM 4	500)	🗹		
							Ø
☐ 125PBznna ☐ 250AC☐ 500PB ☐ 1AGB ☐ Solid: ☐ 4ozCGJ ☐ 8ozAir: ☐ Tedlar™ ☐ Cani	GB □ 250CGE 1AGBna₂ □ 1/ zCGJ □ 16oz0 ster □ Sorber = Bottle, C = Clea	a ₂ □ 100PJ □ 100PJna ₂ B □ 250CGBs □ 250PB AGBs □ 1PB □ 1PBna CGJ □ Sleeve () □ at Tube □ PUF □ ar, E = Envelope, G = Glass, HCl, n = HNO ₃ , na = NaOH,	☐ 125AGB ☐ 125A ☐ 250PBn ☐ 500AG ☐ ☐ ☐ ☐ ☐ ☐ EnCores® () ☐ ☐ Other Matrix (J = Jar, P = Plastic, and	GBh □ 12 GB □ 500A □ □ □ □ □ □ □ TerraCore	AGJ □ 500 es® () : □	125PB AGJs	
		na = 7n(CH ₂ CO ₂) ₂ + NaOH			Review		613

** Record the total number of containers (i.e., vials or bottles) for the affected sample.

WORK ORDER NUMBER: 16-07- 2019 05-180

SAMPLE ANOMALY REPORT

DATE: 07 / 14 / 2016

					nment			
SAMPLES, CONTAINERS, AND L				Con	ımenı	S		
☐ Sample(s) NOT RECEIVED but liste				*****				
☐ Sample(s) received but NOT LISTER				<u></u>				
☐ Holding time expired (list client or E				***********				
☐ Insufficient sample amount for reque		alysis (list ana	lysis)					
☐ Improper container(s) used (list ana	ysis)							
☐ Improper preservative used (list ana								
☐ No preservative noted on COC or la	bel (list a	nalysis and n	otify lab)					
☐ Sample container(s) not labeled								
☐ Client sample label(s) illegible (list c	ontainer	type and anal	ysis)					
☐ Client sample label(s) do not match	COC (co	mment)						
☐ Project information								
☐ Client sample ID								
☐ Sampling date and/or time						· · · · · · · · · · · · · · · · · · ·		
☐ Number of container(s)								
☐ Requested analysis								
☐ Sample container(s) compromised (commen	t) .						
☐ Broken								
☐ Water present in sample contain	er							
☐ Air sample container(s) compromise	ed (comm	nent)						
□ Flat								
☐ Very low in volume								
☐ Leaking (not transferred; duplica	ite bag si	ubmitted)						
☐ Leaking (transferred into ECI Te	dlar™ ba	ags*)						
☐ Leaking (transferred into client's	Tedlar™	⁴ bags*)						
* Transferred at client's request.								
MISCELLANEOUS: (Describe)				Cor	nmen	ts		
HEADSPACE:								
(Containers with bubble > 6 mm or ¼ inch for vol	atile organi	c or dissolved gas	analysis)	(Conta	iners wi	th bubble for other	analysis)	
ECI ECI Total	ECI	ECI	Total		CI ple ID	ECI Container ID	Total Number**	Requested Analysis
Campio io	ample ID	Container ID	Number**				1 daniph	
1 H,I,FG 3				<u> </u>	=2	2,3,4,5		ferrous Iron
2 B2 2								
3 C 3								
			L.,,,,,,,,,	· •				
Comments:							ſ	Reported by:
** Pocord the total number of containers (i.e. Viz	1 1	-) f Ha a 1	acmala					Reviewed by:



Calscience



WORK ORDER NUMBER: 16-07-1080

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/29/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	654377.82.LB
Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	654377.82.LE

Work Order Number: 16-07-1080

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 EPA 314.0 Perchlorate (Aqueous). 3.2 EPA 8330 Nitroaromatics and Nitramines (Aqueous). 3.3 EPA 350.1 Ammonia (Aqueous). 3.4 SM 4500 H+ B pH (Aqueous). 3.5 EPA 1625C (M) NDMA (Aqueous). 3.6 EPA 8260B Volatile Organics (Aqueous). 3.7 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 8 9 10 11
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 Sample Duplicate. 4.3 LCS/LCSD.	18 18 21 22
5	Sample Analysis Summary	29
6	Glossary of Terms and Qualifiers	30
7	Chain-of-Custody/Sample Receipt Form	31



Work Order Narrative

Work Order: 16-07-1080 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/15/16. They were assigned to Work Order 16-07-1080.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL Work Order: 16-07-1080

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/15/16 18:45

Received:

Number of 14

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR05GW01S006	16-07-1080-1	07/15/16 10:00	6	Aqueous
SP882BGW01S004	16-07-1080-2	07/15/16 12:30	8	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1080				Page 1 of 1
<u>Method</u>	Extraction	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1080 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
Е	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.

concentration by a factor of four or greater.

Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record	rd COC Number: CALS07151603	CHZMIII	7/15/2016 1:32:15 PM	Page 1 of 1
Project Name SSFL Task Order 582 Project: 3C Project Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS			
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084		SW826	
Turnaround Time 10 Days PO Number 100067103941		SW68: V1625M-1 V1625M-1 E314	SW90- SW833 50BSIM-	
Sample ID	Sample Date/Time Type Matrix # Containers	Dieserv	DA LL	
) HAR05GW01S006	15-Jul-16 10:00 N Water			
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered: 2	4'C		
Ammonia	Field Filtered: 1 H2	H2SO4, pH<2, 4'C 🛂		
Perchlorate	Field Filtered:	4'C		
Perchlorate - HOLD	Field Filtered: 1	4'C		
pH	Field Filtered: 1	4'C		
The state of the s	Total Containers:	9		
SP882BGW01S004	15-Jul-16 12:30 N Water			
1,4-Dioxane LL	Field Filtered: 3	HCL pH<2 4C		
NDMA - LL	Field Filtered: 2	4'C • •		
VOCs full list	Field Filtered: 3	HCL pH<2 4C		
A CONTRACTOR OF THE CONTRACTOR	Total Containore.	α		

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mittel Clin	7/15/16 1600	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Math / Ver				CH614 PO 100067103941
Relinquished by	Muttel Cu.	ララ	On ice: yes / no	Sample Custody	
Received by		7/15/16 16 co. Airbill No:	Airbill No:	and	Report Copy to
Relinquished by	20	11/2/1/2/1/2	711 C 116 164 Lab Name: CalScience	Michele Castro	Jon Freed
Received by	Colored for	かりプルス	Lab Phone: (949) 870-8766		(208) 660-4929
	7				



WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST

coo	LER	j	OF	1	

CLIENT: CH2M H, W	DATE: 07	1 15 1	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):°C (w	ng	□ Samı	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		ed by: <u>{</u> ed by:\ <u>\</u>	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers No analysis requested Not relinquished No relinquished	<u>F</u>	No	N/A
Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested	——————————————————————————————————————		
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time ph ph Residual Chlorine Dissolved Sulfide Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	🗖		_ _
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	umber:		<u></u>
Aqueous: □VOA □VOAh □VOAna₂ □100PJna₂ □125AGB □125AGBh □□125PBznna □250AGB □250CGBs □250CGBs □250PBn □500AGB □50 □500PB □1AGB □1AGBna₂ □1AGBs □1PB □1PBna □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	0AGJ ☐ 500, ☐ ores [®] () _): ☐	AGJs	





WORK ORDER NUMBER: 16-07-1194

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/01/2016 by:

Richard Villafania Project Manager



ResultLink ▶

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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	3.1 RSK-175M Carbon Dioxide (Aqueous)	5
	3.2 RSK-175M Dissolved Gases (Aqueous)	6
	3.3 EPA 300.0 Anions (Aqueous)	8
	3.4 SM 2320B Alkalinity (Aqueous)	10
	3.5 SM 2510 B Specific Conductance (Aqueous)	11
	3.6 SM 2540 C Total Dissolved Solids (Aqueous)	12
	3.7 SM 3500-FeB Ferrous Iron (Aqueous)	13
	3.8 SM 4500 S2 - D Sulfide (Aqueous)	14
	3.9 SM 5310 B Total Organic Carbon (Aqueous)	15
	3.10 EPA 8015B (M) C8-C40 (Aqueous)	16
	3.11 EPA 8015B (M) TPH Gasoline (Aqueous)	19
	3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous)	21
	3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous)	24
	3.14 EPA 1625C (M) NDMA (Aqueous)	27
	3.15 EPA 504.1 EDB and DBCP (Aqueous)	29
	3.16 EPA 8260B Volatile Organics (Aqueous)	31
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4	Quality Control Sample Data	54
	4.1 MS/MSD	54
	4.2 PDS/PDSD	65
	4.3 Sample Duplicate	66
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Work Order Narrative

Work Order: 16-07-1194 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/18/16. They were assigned to Work Order 16-07-1194.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.





Sample Summary

Client: CH2M HILL Work Order: 16-07-1194

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/18/16 18:20

Received:

Number of 164

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2446Q001	16-07-1194-1	07/18/16 07:00	9	Aqueous
HAR21GW01S006	16-07-1194-2	07/18/16 12:30	31	Aqueous
HAR23GW01S006	16-07-1194-3	07/18/16 11:00	31	Aqueous
ND136GW01S002	16-07-1194-4	07/18/16 12:00	31	Aqueous
ND136GW02S002	16-07-1194-5	07/18/16 13:00	31	Aqueous
WS09GW01S005	16-07-1194-6	07/18/16 09:30	31	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1194				Page 1 of 1
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3005A Filt.	776	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	776	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	1063	GC 25	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 8	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1194 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- concentration by a factor of four or greater.

 SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record	COC Nun	nber: CALS07181601	CH2MHILL			2016	7/18/2016 1:53:06 PM	ľ	age (Page 1 of 11			5	-10
Project Name SSFL Task Order 582 Project 30 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891	Location Santa Susana Project 3Q2016 SA/PCP & AIG GW/ 77.82.LB 1y Hilliard 19 Beckett (530) 570-5084 Days	a Susana Field Lab AIG GWS 770-5084	504.3 300.0	E376.:	RSK175 RSK175	SM3500-Fe-I	SW6010B/6020 SW1625M-Li	SW60101	SW8015F SW6010F/6020	SW8015-I	SW8260BSIM-LI SW8260B	SW9050	SW9060	
Sample ID	Sample Date/Time	Type Matrix # Containers Preserv	0	2		-+				2				
CAQW2446Q001	18-Jul-16 7:00	N Water												
1,4-Dioxane LL		Field Filtered 3 HCL pH<24C	2 4C								<u>></u>			
VOCs full list		Field Filtered 3 HCL pH<24C	24C								<u> </u>			
Report Carbon Ranges		Field Filtered 3 HCL pH<24C	2 4C							2				
	William	Total Containers:	6											

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	ite			The second secon
The second secon	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mat Chi	1/18/16 1500	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	MACH CUM			2	CH614 PO 100067103941
Relinquished by	Motel Clir.). 9.	J. 1563 . 150	Sample Custody	
Received by	132 /	7/10/16 15:00	L S & Airbill No:	and	Report Copy to
Relinquished by		2 (8/11, 18/2	Lab Name: CalScience	Michele Castro	Jon Freed
Received by	Januar	181 91/2/15	16 18:22 Lab Phone: (949) 870-8766		(208) 660-4929
•	7.				



Special Instructions:	ATTN: CH582 PO: 100067101891	CH614 PO 100067103941	Sample Custody	and Report Copy to	Michele Castro Jon Freed	(208) 660-4929		
Shipping Details	7/18/16 500 Method of Shipment: FedEx			76 76/16 5 B AIRBIII NO:	ab Name: CalScience	$ \mathcal{S}_{\mathcal{L}} $ Lab Phone: (949) 870-8766		
Date/Time	005/ 9//8//		ر ج	7/8/16 15 00/	0839 1118114	100:81 21/8/K	And the state of t	
Signatures	Moter Cly	Moter (Jan	Muty Clis	B		Dhund ar	7	
	Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by		

MS = Matrix Spike SD = Matrix Spike Duplicate

Chain of Custody Record	COC Number: CALS07181601	CHZMI	CH28HILL 7/18/2016 1:53:06 PM	Page 3 of 11	1197
Project Name SSFL Location Santa Susana Task Order 582 Project 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnazound Time 10 Days	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084		S SW6010 SW16 SM350 S	SW8260B S SW SW	
	Sample Date/Time Type Matrix # Containers Pro	E376.2 A2320B 504.1 300.0	08/6010F 08/6020 025M-LL 00-Fe-D 08/2540C 08/175M 08/175M	SW9060 SW9050 SSIM-LL W8260B W8015-P W8015B	
TDS	Field Filtered 1 4'C				
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered 2 4'C				
VOCs full list	Field Filtered 3 HCL pH<24C	K24C			
EDB/DBCP	Field Filtered 3 Na2S203, 4'C	33, 4'C			
Report Carbon Ranges	Field Filtered 3 HCL pH<24C	I+2 4C			
	Total Containers:	31			

		4

Chain of Custody Record COC Number: C.	ALS07181601	Ū	CH2MHIL	Ī	ار	/18/20	16 1:5	7/18/2016 1:53:06 PM		Page 4	of 11)	(Z)	(Ab)
Project Name SSFL Location Santa Susan: Task Order 582 Project 3Q2016 SA/PCP & AIG GW/ Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891 Sample ID	a Field Lab S • Matrix # Containers	iners Preserv	504.1 300.0	E376.2 A2320B	RSK175	SM2540C RSK175M	SM3500-Fe-D	SW6010B/6020 SW1625M-LL	SW6010F/6020	SW8015B SW6010F/6020	SW8015-P	SW8260BSIM-LL SW8260B	SW9050	SW9060		
3 HAR23GW01S006 18-Jul-16 11:00 N	Water															
Alkalinity Fie	Field Filtered	4'C		<u> </u>												
CO2 Fie	Field Filtered 2	4'C				<u> </u>										
1,4-Dioxane LL	Field Filtered 3	HCL pH<24C										>				
Methane, ethane, ethene	Field Filtered 3	HCL pH<24C			<u>></u>											
Ba, B, Ca, Mg, K, Na, Sr Fie	Field Filtered 🗸 1	HNO3, 4'C								>						
Mn	Field Filtered 🗸 1	HNO3, 4'C							>							
Ferrous Iron Fie	eld Filtered 🗸	4'C					5									
SO4, CI, NO3, F	eld Filtered 1	4'C														
Conductivity	eld Filtered 1	4'C											<u>></u>			
Sulfide	eld Filtered 🗌 1	NaOH, ZnAc, 4'C		S												
TOC Fie	eld Filtered 1	H2SO4, pH<2, 4'C												\		
Ba, B, Ca, Mg, K, Na, Sr Fie	ield Filtered 1	HN03, 4'C						<u>></u>								
NDMA - LL Fie	Field Filtered 2	4'C						<u> </u>								
Approved by Sampled by Received by	Time (M. 1580) Method of \$ On Ice: ye Airbill No: (S. 20) Lab Name: (S. 70) Lab Phone	Shipping D Shipment: ss / no CalScience (948) 870-87	etails FedEx			-	Sam	ATTN: Sample Custody and Michele Castro	stody		Special Instruct CH582 PO: 1000 CH614 PO 1000 Report Copy to Jon F (208) 66	nstruc O: 100 O 100 O 100 Jon Jon 208) 6	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929	: 01891 33941		

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Chain of Custody Record COC Number:	mber: CALS07181601	_	CH2MHILL 7/18/2016 1:53:06 PM		7/18/2	016 1.	53:06	W	Page	Page 5 of 11	—			コ	2	194
Project Name SSFL Location Santa Sur Task Order 582 Project 3Q2016 SA/PCP & AIG O Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5 Turnaround Time 10 Days PO Number 100067101891	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084 amnle Date/Time Tyne Matrix # Containers	lainers Preserv	A2320B 504.1 300.0	RSK175 E376.2	RSK175M	SM3500-Fe-D SM2540C	SW1625M-LL	SW6010F SW6010B/6020	SW6010F/6020	SW8015-P SW8015B	SW8260B	SW8260BSIM-LL	SW9060 SW9050			
	- 11	li .										怩	╬			
lus (Lieid Fillered	ا 4-د]]	<u>></u>]		_				
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered	2 4'C								5						, ,
VOCs incl. Isopropyl Alcohol	Field Filtered	3 HCL pH<24C									2					
EDB/DBCP	Field Filtered	3 Na2S203, 4'C	S													
Report Carbon Ranges	Field Filtered	3 HCL pH<24C								<u>></u>						
	Total Containers:	iners: 31										-				

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	G)			
	Signatures	Date/Fime	Shipping Details		Special Instructions:
Approved by	Mutal Cle	1/18/16 1500) Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Moter (hun		!		CH614 PO 100067103941
Relinquished by	Metal Olin	ر ج	On Ice: yes / no	Sample Custody	
Received by		7/10/16	Arbill No:	and	Report Copy to
Relinquished by	74	1/8/1 /8/1	(8) 24 ab Name: CalScience	Michele Castro	Jon Freed
Received by	official or h	X18/11/851	1871 (8: 24 ab Phone: (949) 870-8766		(208) 660-4929
		10/01	_	-	

Project Name SSFL Loc										_	_			-		-	_	_	_	
F82 Project 3Q2 Fr 654377.82.LB er Jeremy Hilliard ler Jamie Beckett	Location Santa Susana Project 3Q2016 SA/PCP & AIG GWS 7.82.LB y Hilliard Beckett (530) 570-5084	sana Field Lab 3WS 5084											SW60			5W826				
Turnaround Time 10 Days PO Number 100067101891					504.1 300.0	A2320B	RSK175 E376.2	RSK175M	SM2540C	1625M-LL 500-Fe-D	10B/6020	SW6010F	10F/6020	SW8015B	SW8015-P	OBSIM-LI SW8260B	SW9050	SW9060		
Sample ID Sam	Sample Date/Time	Type Matrix #Co	# Containers Pre	Preserv									1			\dashv	-			
ND136GW01S002 18-J	18-Jul-16 12:00	N Water																		
Alkalinity		Field Filtered	1 4'C			<u>></u>														
002		Field Filtered	2 4'C					>							Ħ					
1,4-Dioxane LL		Field Filtered	3 HCL pH<24C	24C											H	>				
Methane, ethane, ethene	The state of the s	Field Filtered	3 HCL pH<24C	2 4C			<u>S</u>								H					
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered 🗸	1 HNO3, 4'C	4'C						H			>							
Mn	A A CALABATA AND A CA	Field Filtered	1 HNO3, 4'C	4'C								<u>></u>		Lisa de la constanta de la con						
Ferrous Iron		Field Filtered 🗸	1 4'C							<u>S</u>										
SO4, Cl, NO3, F		Field Filtered	1 4'C		<u></u>					H										
Conductivity		Field Filtered	1 4'C														<u>></u>			
Sulfide		Field Filtered	1 NaOH, ZnAc, 4'C	Ac, 4'C			\													
T0C		Field Filtered	1 H2SO4, pH<2, 4'C	1<2,4'C														S		
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered	1 HNO3, 4'C	4'C							2					H				
NDMA - LL		Field Filtered	2 4'C							>						붐				
MS = Matrix Spike SD = Matrix Spike Duplicate	Duplicate					-	***************************************													
Approved by Manageria	t m	Date/Time /8/6 / S0	Shippin Method of Shipment:	5	etails FedEx					_	ATTN:			Spe CH5	cial 82 P	nstri 0: 1(Special Instructions: CH582 PO: 10006710	Special Instructions: CH582 PO: 100067101891	39.1	
Sampled by Motor C	Jen o	Ou	On Ice: yes / no							Samp	Sample Custody	stod		원 강	<u>4</u> O	0	0067	1039	7	
Received by Received by Received by	20 H 20 H 20 H 20 H 20 H 20 H 20 H 20 H	MIG K-CO Airb (V (R:20) Lab	Airbill No: Lab Name: CalScience Lab Phone: (949) 870-8766	ience 870-876((O					Mich	and Michele Castro	astro	_	Rep	ort.	Report Copy to Jon F (208) 66	py to Jon Freed 08) 660-49	Copy to Jon Freed (208) 660-4929		
>	~																			



Chain of Custody Record COC Number:	umber: CALS07181601	U	CH2MHILL 7/18/2016 1:53:06 PM	Ī	닐	7/18	2016	1.53	VG 90		Page 7 of 1	7 of 1	_			V	(Z)	Æ
roject Name SSFL Location Santa Susan ask Order 582 Project 3Q2016 SA/PCP & AIG GW roject Number 654377.82.LB roject Manager Jeremy Hilliard (530) 570-508 ample Manager Jamie Beckett (530) 570-508 urnaround Time 10 Days	Santa Susana Field Lab CP & AIG GWS (530) 570-5084		300.0	A2320E	RSK175	RSK175N	SM25400	SW1625M-LI SM3500-Fe-I	SW6010B/6020	SW6010E	SW8015E	SW8015-E	SW8260E	SW8260BSIM-LI	SW9050	SW9060]
Sample ID Sample Date/Time Typ	ime Type Matrix # Containers	ners Preserv								ŗ			3	,				
TDS	Field Filtered 1	4'C					<u>></u>											
Report Carbon Ranges ind. EFH C8-C30 Total	Field Filtered 2	4'C																·
VOCs full list	Field Filtered 3	HCL pH<2 4C											>		H			11 - 1
EDB/DBCP	Field Filtered 3	Na2S203, 4'C						H							H			
Report Carbon Ranges	Field Filtered 3	HCL pH<2 4C										>						
	Total Containers:	ars: 31															***	
CONTRIBUTION OF THE PROPERTY O																		1

	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mat Cul	mc ollett	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by Relinguished by	Metal (M.	3	On Ice: yes / no	Sample Custody	00000
Received by	27	71/8/16 150	S S Airbill No:	and	Report Copy to
Relinquished by		7/81/1/81/4	CalScience CalScience	Michele Castro	Jon Freed
Received hy	CON WOOM	ナルグバイル	16 18 18 10 Lab Phone: (949) 870-8766	-	(208) 660-4929



Jon Freed (208) 660-4929

Report Copy to

Michele Castro

Lab Phone: (949) 870-8766 ALab Name: CalScience

Relinquished by Received by

Relinquished by Received by

S - W Airbill No:

and

Chain of Custody Record COC Number:	umber: CALS07181601	81601	Q	CH2MHILL	2	블		7/18/2016 1:53:07 PM	3 1:53	.07 PI		Page 8 of 11	8 of	1				3	1194
Project Name SSFL Location Santa Susana Task Order 582 Project 3Q2016 SA/PCP & AIG GWS Project Number 654377.82LB	rta Susana Field Lab , AIG GWS														S				
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 8	(530) 570-5084											SW60			W826				
Turnaround Time 10 Days PO Number 100067101891				300	A232 504	E376	RSK17	SM254	500-Fe	10B/60:	SW601	10F/60	SW8015	SW826	OBSIM-	SW90	SW90		
Sample ID Sample Date/Time Type	ime Type Matrix	# Containers	ers Preserv					0C			0F				LL	50	60		
) ND136GW02S002 18-Jul-16 13	13:00 N Water												•••						
Alkalinity	Field Filtered		4'C		>														
C02	Field Filtered	2	4'C				S												
1,4-Dioxane LL	Field Filtered	. D	HCL pH<2 4C												>				
Methane, ethane, ethene	Field Filtered	3	HCL pH<2 4C				>												
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered	>	HNO3, 4'C									<u>S</u>							
Mn	Field Filtered	<u>></u>	HNO3, 4'C								>								
Ferrous Iron	Field Filtered	<u>-</u>	4'C						>										
SO4, CI, NO3, F	Field Filtered	-	4'C	>															
Conductivity	Field Filtered	1	4'C													>			
Sulfide	Field Filtered	-	NaOH, ZnAc, 4'C			>													
100	Field Filtered	1 1	H2SO4, pH<2, 4'C														>		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered	-	HN03, 4'C							>									
NDMA - LL	Field Filtered	1 2	4'C							<u> </u>									
MS = Matrix Spike SD = Matrix Spike Duplicate												-							**********
Approved by Mittel Class	Date/Time	Method o	Shipping Details Method of Shipment: FedEx	Details FedEx						ATTN:		0, 0 (Special Instructions: CH582 PO: 100067101891	al Ing	struc : 100	:tion:	5: 0189	Σ,	
Sampled by MILA (Ling Relinquished by MILA)		On Ice:	yes / no						Samı	Sample Custody	stody		<u>1</u> 9	7 J	5	L/90	0394		



Chain of Custody Record co	COC Number: CALS07181601	Ü	CH2MHILL 7/18/2016 1:53:07 PM	Ī	1/1	8/201	5 1:53	:07 PI		Page 9 of 11	of 11				7	12	\mathcal{L}
Project Name SSFL Location Santa Susana Task Order 582 Project 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10 Days	Field Lab		504.1 300.0	E376.2 A2320B	RSK175M RSK175	SM2540C	SM3500-Fe-D	SW6010B/6020 SW1625M-LL	SW6010F	SW8015B SW6010F/6020	SW8015-P	SW8260B31H-111	SW9050 SW8260BSIM-LL	SW9060			
Sample ID Sample Da	Sample Date/Time Type Matrix # Containers	rs Preserv					_									1	
TDS	Field Filtered 1	4'C				2											
Report Carbon Ranges ind. EFH C8-C30 Total	Field Filtered 2	4'C								<u>></u>							
VOCs full list	Field Filtered 3	HCL pH<24C										<u>S</u>					
EDB/DBCP	Field Filtered 3	Na2S203, 4'C	>														
Report Carbon Ranges	Field Filtered 3	HCL pH<24C									>					П	
	Total Containers:	31															

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate			
	Signatures Date/Time	Shipping Details		Special Instructions:
Approved by	144th (Leu 7/18/16 1500 Meth	//// / S00 Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Mutil Clein 'I' gail			CH614 PO 100067103941
Relinquished by	Mitted Clein N. & S	ic. yes / 110	sample Custody	
Received by	7/18/16 1500 AIRBI	: NO:	and	Report Copy to
Relinquished by	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Yame: CalScience	Michele Castro	Jon Freed
Received by	My Wale to HISTL, 18:20 Lab Phone: (949) 870-8766	hone: (949) 870-8766		(208) 660-4929

Project Names (#247787.18 Project 302016 SAPOP & ADG ONG	Chain of Custody Record	ecord COC Number:	CALS07181601		CH2MHILL	7/18/2016 1:53:07 PM		Page 10 of	11	\bigcirc	767
Sample Date/Time Type Matrix # Containers Preserv 18-Jul-16 9:30 N Water 19-Jul-16 9:30 N Water 19-Jul-16 9:30 N Water 19-Jul-16 19-Jul-16 9:30 N Water 19-Jul-16 19-Jul-16 9:30 N Water	Project Name SSFL Task Order 582 Proje Project Number 654377.82.I Project Manager Jeremy Hill: Sample Manager Jamie Beck Turnaround Time 10 Days PO Number 100067101891	302	sana Field Lab 3WS .084		E376. A2320 504.	SM2540	SW6010B/602	SW8015			
18-Jul-16 9:30 N Water 18-Jul-16 9:30 N Water 18-Jul-16 9:30 N Water 18-Jul-16 19-Jul-16 1	Sample ID	Sample Date/Time	Matrix		2 B	С	F 0	В			
Field Filtered 1	6 WS09GW01S005										
Field Filtered 2	Alkalinity		ield Filtered								
Field Filtered 3	002		ield Filtered								
Field Filtered 3 HCL pH-24C	1,4-Dioxane LL								>		
Field Filtered 1	Methane, ethane, ethene										
Field Filtered 1	Ba, B, Ca, Mg, K, Na, Sr										
Field Filtered 1 4°C	Mn						S				
Field Filtered 1	Ferrous Iron										
Field Filtered 1	SO4, CI, NO3, F			A A A A A A A A A A A A A A A A A A A							
Field Filtered 1 NaOH, ZnAC, 4°C	Conductivity		Field Filtered							<u></u>	
State Field Filtered 1 H2SO4, pH<2, 4°C	Sulfide		ield Filtered								
SD = Matrix Spike Duplicate	100		ield Filtered							>	
SD = Matrix Spike Duplicate Signatures Method of Shipping Details Method of Shipment: FedEx ATTN: and Michele Castro Michele Castro	Ba, B, Ca, Mg, K, Na, Sr										
SD = Matrix Spike Duplicate Signatures Shipping Details Method of Shipment: FedEx Method of Shipment: FedEx On Ice: yes / no Airbill No: Airb	NDMA - LL		ield Filtered								
Mothod of Shipment: FedEx Method of Shipment: FedEx Method of Shipment: FedEx Sample Custody and ATTN: ATTN: ATTN: ATTN: Antibili No: and Aftibili No: Alighe (F-70) Lab Phone: (949) 870-8766 Michele Castro			te/Time	200	Dotaile			Signa	200		
	Sampled by Relinquished by Received by Received by Received by		85 00 00 00 00 00 00 00 00 00 00 00 00 00		FedEX FedEX 7766		ATTN: mple Custody and ichele Castro	CH614 CH614 Report	PO: 100 PO 1000 I Copy to Jon (208) 6	067103941 067103941 067103941 50	

Chain of Custody Record COCN	COC Number: CALS07181601	U	CH2MHILL 7/18/2016 1:53:07 PM	Ī	긜	31/1	/2016	1:53	07 P		Page	Page 11 of 11	11			V	94	7/	`
302								S	SW		SW			SW8					
Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891	(530) 570-5084		300	A232	RSK1	RSK17	SM254	SW1625M-3 M3500-Fe	6010B/60:	SW601	6010F/60	SW8015-	SW8260	260BSIM-	SW905	SW90			
Sample ID Sample Date/Time	Time Type Matrix # Containers	rs Preserv		0В			0C			0F	20				50	60			
TDS	Field Filtered 1	4'C					>												
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered 2	4'C										\							
VOCs incl. Isopropyl Alcohol	Field Filtered 3	HCL pH<2 4C											>						
EDB/DBCP	Field Filtered 3	Na2S203, 4'C	<u>></u>																
Report Carbon Ranges	Field Filtered 3	HCL pH<24C						П					S						
	Total Containers	31																	
Annual Comment of the																			

				A	
AS = Matrix Spike	IS = Matrix Spike SD = Matrix Spike Duplicate	ē.			
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Month you	7/14/6 150	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
sampled by	Metal Cor			1	CH614 PO 100067103941
Relinguished by	Most (1)	\ \ !	On ice: yes / no	Sample Custody	·
Received by	3/0	7/18/10 (Ca)	Airbill No:	and	Report Copy to
Relinquished by		7/18/11/ (8:22	K:20 Lab Name: CalScience	Michele Castro	Jon Freed
Received by	Manny Try	218/1 1/8/14	8220 Lab Phone: (949) 870-8766		(208) 660-4929

WORK ORDER NUMBER: 16-07- Page 100 of 109

Calscience

SAMPLE RECEIPT CHECKLIST COOLER / OF 3

CLIENT:	CHIMHILL			DA	ATE: 07	<u> 18</u>	/ 2016
Thermometer ☐ Sample ☐ Sample(s	er ID: SC1B (CF: 0.0°C); T le(s) outside temperature c le(s) outside temperature c	O°C, not frozen except sedim emperature (w/o CF):	oy:) nilled on same day o		Blank Checke		
CUSTODY							
Cooler Sample(s)	☐ Present and Intact ☐ Present and Intact	☐ Present but Not Intact☐ Present but Not Intact☐	Not Present Not Present	□ N/A □ N/A	Checke Checke		1053
SAMPLE C	ONDITION:				Yes	No	N/A
		received with samples			🔎		
COC docum	nent(s) received complete				/		
☐ Samp	ling date ☐ Sampling tim	e □ Matrix □ Number of o	containers				
□ No an	alvsis requested ☐ Not re	elinquished No relinquish	ned date □ No reli	nquished tim	ne		
Sampler's r	name indicated on COC						
Sample cor	ntainer label(s) consistent v	vith COC	******		🗹		
Sample cor	ntainer(s) intact and in good	d condition			🔎 🛒		
Proper conf	tainers for analyses reques	sted			🗹		
Sufficient v	olume/mass for analyses re	equested			🗷		
Samples re	ceived within holding time	······································			,		
		ses received within 15-minu					_
□ pH [☐ Residual Chlorine ☐ Di	ssolved Sulfide Dissolve	ed Oxygen		🗆		Æ
Proper pres	servation chemical(s) noted	d on COC and/or sample cor	ntainer		2		
		eceived for certain analyses					
☐ Volati	le Organics □ Total Meta	ls □ Dissolved Metals				/	
Container(s	s) for certain analysis free	of headspace			🗖		
Z-Volat	ile Organics Dissolved	Gases (RSK-175) ☐ Disso	olved Oxygen (SM 4	500)			
☐ Carbo	on Dioxide (SM 4500) 🗷 🛭	errous Iron (SM 3500) 🔲 I	Hydrogen Sulfide (I	Hach)		_	_
Tedlar™ ba	ag(s) free of condensation				🗖		Ø
CONTAINE	ER TYPE: 10 9	2/18/Np	(Trip Bla	ınk Lot Num	nber:)
Aqueous:	ZVOA ZVOAH ZVOAH	na ₂ □ 100PJ □ 100PJna ₂ B Ø 250CGBs Ø 250PB	□ 125AGB □ 125	AGB h □ 12	5AGB p ∠	125PB)
Z 125PBzr	ına .☑ 250AGB 🗆 250CG	B 250CGBs 250PB	2 50PB n □ 500A	GB □ 500A	√GJ □ 500)AGJ s	
□ 500PB	ZÍ1ÅGB □1AGBna2 □1	IAGBs Ø 1PB □ 1PBna [1 250 pBnf □ _]	
Solid: □ 40	ozCGJ □ 8ozCGJ □ 16o	IAGBs Z 1PB 1PBna (zCGJ Sleeve ()	EnCores® ()	☐ TerraCore	es" ()	U	
Air: □ Ted	lar™ □ Canister □ Sorbe	nt Tube	Other Matrix (_)	: U	U	
Container A	$\mathbf{A} = Amber, \mathbf{B} = Bottle, \mathbf{C} = Cle$	ear, E = Envelope, G = Glass, J	J = Jar, P = Plastic, ar	d Z = Ziploc/f	Resealable	Bag	
Preservative	e: b = buffered, f = filtered, h	= HCI, n = HNO ₃ , na = NaOH, r	$\mathbf{na_2} = Na_2S_2O_3, \mathbf{p} = H_3$	₃PO₄, Lab	eled/Check	ked by:	10>5

 $\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$



Reviewed by:

WORK ORDER NUMBER: 16-07 age 107 pc 109

SAMPLE RECEIPT CHECKLIST

 $cooler \underline{2} of \underline{3}$

DATE: 07 / 18/ 2016

CLIENT:	CH2MHILL D.	ATE: 07 /	18	/ 2016
TEMPERA Thermome Sam Sam Sam Sample	TURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) ter ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):°C ble(s) outside temperature criteria (PM/APM contacted by:) ble(s) outside temperature criteria but received on ice/chilled on same day of sampling s) received at ambient temperature; placed on ice for transport by courier emperature: □ Air □ Filter	Blank Checked		
VIII DIGHT I	omporation and an arrangement of the second			
Custody Cooler Sample(s)	☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked Checked	d by: _	804
SAMPLE	CONDITION:	Yes	No	N/A
Chain-of-C	custody (COC) document(s) received with samples	Æ		
COC docu	ment(s) received complete	I		
☐ Sam	pling date □ Sampling time □ Matrix □ Number of containers			
□Noa	nalysis requested 🛚 Not relinquished 🗎 No relinquished date 🗎 No relinquished tir	me 	_	_
Sampler's	name indicated on COC	🗷		
Sample co	ontainer label(s) consistent with COC	💆		
Sample co	ontainer(s) intact and in good condition	[A]		
Proper co	ntainers for analyses requested	<u>µ</u>		
Sufficient	volume/mass for analyses requested	 고		
Samples	eceived within holding time	🔼		
Agueo	us samples for certain analyses received within 15-minute holding time		1	9 /
□рН	☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen	⊔ 		□ '
	eservation chemical(s) noted on COC and/or sample container	⊭	L	u
	served aqueous sample(s) received for certain analyses			
□ Vola	tile Organics Total Metals Dissolved Metals	_		
Container	(s) for certain analysis free of headspace	ப	لستعم	لسا
□ Vola	atile Organics			
☐ Car	oon Dioxide (SM 4500) Ferrous Iron (SM 3500) Hydrogen Sulfide (Hach)	П		Ø
Tedlar™	pag(s) free of condensation		-	`
CONTAIN	(Trip Blank Lot Nur ZVOA ZVOAh ZVOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 12	mber:	12500)
Aqueous	VOA VOAN VOANa 100PJ 100PJ 100PJna 125AGB 1125AGB 1125	ZOMODP ZO AGI II 500	AGJED	
Z 125PB:	250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 500A		.505	
□ 500PB	ZONAGB	es®()		
Solid: □	4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ Ellcoles () □ Folicios. dlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix (): □		
Air: □ Te	dlar™ Li Canister Li Sorbeiti Tube Li Foi Li Otto Mattin Cand 7 - Ziploc	/Resealable F	ao	
Container	A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziplocate \mathbf{Z} = \mathbf	neled/Check	ed bv:	1053
Preservat	ve: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCl}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na}_2 = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Lake	Review	ed by:	689
1	$\mathbf{s} = H_2 SO_4$, $\mathbf{u} = \mathbf{u}$ tra-pure, \mathbf{z} nna = \mathbf{Z} n(CH ₃ CO ₂) ₂ + NaOH		•	

WORK ORDER NUMBER: 16-07-99 108 61/165

SAMPLE RECEIPT CHECKLIST

 $\frac{3}{3} \text{ of } \frac{3}{3}$

			10			
DATE:	07	1	10	/	2016	ò

CLIENT: CH2MHILL		DATE: 07 /	181	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day □ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	y of samplin	g	□ Samp	
CUSTODY SEAL: Cooler	t □ N/A	Checke	d by:	804
Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present	t □ N/A	Checke	ed by: _ <i>L</i>	053
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers			No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □		p		
Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time		1		□ ☑
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses □ Volatile Organics □ Total Metals □ Dissolved Metals		🖊		
Container(s) for certain analysis free of headspace ☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SN☐ Carbon Dioxide (SM 4500) ☑ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide Tedlar™ bag(s) free of condensation	vi 4500) e (Hach)			
CONTAINER TYPE: Aqueous: ZVOA ZVOAh ZVOAh ZVOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGB □ 125PBznna ☑ 250AGB □ 250CGB Z 250CGBs Z 250PB Z 250PBn □ 50□ 500PB Z 1AGB □ 1AGBna₂ □ 1AGBs Z 1PB □ 1PBna Z 25PPA □ □ Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ EnCores® () □ Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = NaOH	Blank Lot N 25AGBh 00AGB 50 TerraC , and Z = Zipl	125AGBp Z 125AGBp Z 00AGJ □ 500 J □ ores® ()): □ 0c/Resealable	□ □ Bag	
Preservative: $\mathbf{b} = \text{bulleted}$, $\mathbf{r} = \text{littleted}$, $\mathbf{r} = \text{rittleted}$, $\mathbf{r} = $		Reviev	ved by: _	659



WORK ORDER NUMBER: 16-07- 209 of 109 of 109

SAMPLE ANOMALY REPORT

DATE: 07 / 18 / 2016

SAMPLES	, CONTAINE	RS, AND	LABELS	:		Commen	ts			
☐ Sample(s	s) NOT RECEI	VED but li	sted on CO	С						
☐ Sample(s	s) received but	NOT LIST	ED on CO	0						
	ime expired (li					,				
☐ Insufficie	nt sample amo	unt for rec	quested ana	alysis (list ana	lysis)					
☐ Improper	container(s) u	sed (list a	nalysis)							,
☐ Improper	preservative ι	used (list a	nalysis)			*****				
☐ No prese	No preservative noted on COC or label (list analysis and notify lab)									
☐ Sample of	□ Sample container(s) not labeled									
☐ Client sample label(s) illegible (list container type and analysis)									····	
☐ Client sa	☐ Client sample label(s) do not match COC (comment)									
☐ Project information										
☐ Client sample ID										
☐ Sampling date and/or time										
□ Numl	per of containe	r(s)								
☐ Requested analysis										
☐ Sample	container(s) co	mpromise	d (commen	t)						
☐ Broke	en									<u> </u>
□ Wate	r present in sa	mple conta	ainer							
☐ Air samp	ole container(s)	comprom	ised (comm	nent)						
□ Flat										
□ Very	low in volume									
□ Leak	ing (not transfe	erred; dupl	icate bag sı	ubmitted)						
□ Leak	ing (transferred	d into ECI	Tedlar™ ba	ags*)						
	ing (transferre									
* Transfer	red at client's requ	est.								
MISCELL	ANEOUS: (D	escribe)				Commer	nts			
	ζ									
HEADSP	۸۵Ε۰				-					
	ith bubble > 6 mm	or ¼ inch for	volatile organic	c or dissolved gas	analysis)	(Containers wi	th bubble for othe	r analysis)		
ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	Requeste	d Analysis
3		12				2-6	E2	1	Ferrous	Iron
	CIF					-	<i>V</i> -			
								-		
Comments	s:									
							Market Market		Reported by:	1053 619
** Record the	total number of co	ntainers (i.e.,	vials or bottles	s) for the affected	sample.			F	Reviewed by:	019





WORK ORDER NUMBER: 16-07-1195

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 07/29/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name: 3	Q2016 SA/PCP	& AIG GWS /	654377.82.LB
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Work Order Number: 16-07-1195

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 EPA 314.0 Perchlorate (Aqueous). 3.2 EPA 8330 Nitroaromatics and Nitramines (Aqueous). 3.3 EPA 350.1 Ammonia (Aqueous). 3.4 SM 4500 H+ B pH (Aqueous). 3.5 EPA 8270C SIM (Aqueous).	5 6 9 10 11
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 Sample Duplicate. 4.3 LCS/LCSD.	12 12 13 14
5	Sample Analysis Summary	18
6	Glossary of Terms and Qualifiers	19
7	Chain-of-Custody/Sample Receipt Form	20



Work Order Narrative

Work Order: 16-07-1195 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/18/16. They were assigned to Work Order 16-07-1195.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1195

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/18/16 18:20

Received:

Number of 13

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR21GW01S006	16-07-1195-1	07/18/16 12:30	7	Aqueous
HAR23GW01S006	16-07-1195-2	07/18/16 11:00	6	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1195	Page 1 of 1			
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1195 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
	Greater than the indicated value.
>	
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

- Χ % Recovery and/or RPD out-of-range.
- Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

WORK ORDER NUMBER: 16-07- Page 21/195

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER OF

LIENT: CHZIMHILL	DATE: 07	1 <u>l</u>	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3·7°C (w/ CF): 3·7 Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampli Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	ng	□ San	
CUSTODY SEAL:			
Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N// Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N//		ed by: _ ed by: _	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers		No	N/A
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC	d	0	
Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested	🗹		
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time			
pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen			
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500)			Ø
□ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation			Ø
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJp □ 100PJna₂ □ 125AGB □ 125AGBh □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PB □ 500AGB □ 500AGB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	1 125AGB p	125PB DAGJs D Bag	·
Preservative: \mathbf{b} = buffered, \mathbf{f} = filtered, \mathbf{h} = HCl, \mathbf{n} = HNO ₃ , \mathbf{na} = NaOH, \mathbf{na}_2 = Na ₂ S ₂ O ₃ , \mathbf{p} = H ₃ PO ₄ , \mathbf{s} = H ₂ SO ₄ , \mathbf{u} = ultra-pure, \mathbf{znna} = Zn(CH ₃ CO ₂) ₂ + NaOH	_apeled/Criec Reviev	ved by:	M/08)-





WORK ORDER NUMBER: 16-07-1295

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/01/2016 by:

Richard Villafania Project Manager



ResultLink >

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Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

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	3.1 RSK-175M Carbon Dioxide (Aqueous)	5
	3.2 RSK-175M Dissolved Gases (Aqueous)	6
	3.3 EPA 300.0 Anions (Aqueous)	7
	3.4 SM 2320B Alkalinity (Aqueous)	9
	3.5 SM 2510 B Specific Conductance (Aqueous)	10
	3.6 SM 2540 C Total Dissolved Solids (Aqueous)	11
	3.7 SM 3500-FeB Ferrous Iron (Aqueous)	12
	3.8 SM 4500 S2 - D Sulfide (Aqueous)	13
	3.9 SM 5310 B Total Organic Carbon (Aqueous)	14
	3.10 EPA 8015B (M) C8-C40 (Aqueous)	15
	3.11 EPA 8015B (M) TPH Gasoline (Aqueous)	18
	3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous)	20
	3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous)	22
	3.14 EPA 1625C (M) NDMA (Aqueous)	25
	3.15 EPA 504.1 EDB and DBCP (Aqueous)	27
	3.16 EPA 8260B Volatile Organics (Aqueous)	28
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4	Quality Control Sample Data	51
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7	Chain-of-Custody/Sample Receipt Form	91



Work Order Narrative

Work Order: 16-07-1295 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/19/16. They were assigned to Work Order 16-07-1295.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1295

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

PO Number: Montgomery, AL 36106-2801

> Date/Time 07/19/16 18:43

Received:

Number of 133

Containers:

Jeremy Hilliard Attn:

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2447Q001	16-07-1295-1	07/19/16 07:00	9	Aqueous
HAR11GW01S007	16-07-1295-2	07/19/16 12:00	31	Aqueous
ND136GW03S003	16-07-1295-3	07/19/16 10:30	31	Aqueous
ND136GW04S002	16-07-1295-4	07/19/16 11:30	31	Aqueous
RD49CGW01S006	16-07-1295-5	07/19/16 12:00	31	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1295				Page 1 of 1
<u>Method</u>	Extraction	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 9	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3005A Filt.	776	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	776	ICP/MS 03	1
PA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	715	GC 24	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
RSK-175M	N/A	1074	GC 14	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1295 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- concentration by a factor of four or greater.

 SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record	d COC Number: CALS07191601	CH2MHILL	1	7/19/2016 2:37:19 PM	Page 1 of 9	of 9	2		77
Project Name SSFL Task Order 582 Project: 3Q20 Project Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS								managers on the late of the
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084		The second secon	SW1	sw601	S	sw8260		
Turnaround Time 10 Days PO Number 100067101891		E376. A2320 504.	SM2540 RSK175 RSK17	0B/602 625M-L	SW8015 OF/602 SW6010	SW8260 W8015-	SW905 BSIM-L	SW906	again an armondos Malanda Mala
Sample ID Sc	Sample Date/Time Type Matrix # Containers Preserv)B .1	м	0	0	<u>:</u>		0	
CAQW2447Q001	19-Jul-16 7:00 N Water								
1,4-Dioxane LL	Field Filtered: 3 HCL pH<24C	24C					5		
Vocs full list	Field Filtered: ☐ 3 HCL pH<24C	24C				S □			
Report Carbon Ranges	Field Filtered: ☐ 3 HCL pH<2.4C	2 4C				<u>3</u>			
The commission was the latter approximate to the contract of t	Total Containers:	0		the state of the s					

The second secon	Shipping Details Special Instructions:	ATTN: CH582 PO: 100067101891	Sample Custody	and	ience Michele Castro Jon Freed		_
	Date/Time	7/19/16 1500 Method of Shipment:	On Ice: yes / no	Airbill No:	The Carlo Lab Name: CalScie	+(9(00 1877) Lab Phone: (949) 870-8766	4/14/16 1893
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures	Mat Clay	Motor Class			A STOCK	RATE PATH,
MS = Matrix Spike		Approved by	Sampled by	i by	Received by	Relinquished by	Received by

Chain of Custody Record	COC Number: CALS07191601		CH2MHILL 7/19/20	7/19/2016 2:37:19 PM Page	e2of9
302	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS				SN
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084			sw601	s
Turnaround Time 10 Days PO Number 100067101891			SM2540 RSK175 RSK17 E376. A2320 504.	0F/602 SW6010 0B/602 625M-L	SW906 SW905 BSIM-L SW8260 W8015- SW8015
Sample ID Sampl	Sample Date/Time Type Matrix # Col	# Containers Preserv	5M 75 2 0B	F C L	0 L B
HAR11GW01S007 19-Jul-16	1-16 12:00 N Water				The second of th
Alkalinity	Field Filtered:	1 4'C			
CO2	Field Filtered:	2 4'C			
1,4-Dioxane LL	Field Filtered:	3 HCL pH<24C			
Methane, ethane, ethene	Field Filtered:	3 HCL pH<24C			
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	1 HNO3, 4'C			
	Field Filtered:	1 HNO3, 4'C		<u> </u>	
Ferrous Iron	Field Filtered:	1 4'C			
SO4, CI, NO3, F	Field Filtered:	1 4'C			
Conductivity	Field Filtered:	1 4'C			
Sulfide	Field Filtered:	1 NaOH, ZnAc, 4'C			
100	Field Filtered:	1 H2SO4, pH<2, 4'C			
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	1 HNO3, 4'C			
NDMA - LL	Field Filtered:	2 4'C			
MS = Matrix Spike SD = Matrix Spike Duplicate	uplicate				
	Date/Time	Shipping Details	etails	, MILL	Inst
Approved by Month	27/19/16 500 Method	0	FedEx	;	CH582 PO: 100067101891 CH614 PO 100067103941
Sampled by	1	ce: yes / no		Sample Custody	
Received by	EC 7(19) 6 (5-80 Airb	Airbiil No: Lab Name: CalScience		and Michele Castro	Report Copy to Jon Freed
Received by Received by	A 7/19/16 1843 Lab	Lab Phone: (949) 870-8766	166		(208) 660-4929
<i>A1.</i>					

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Chain of Custody Record COC Number: CALS07191601 CH2NHILL 7/19/2016 2:37:20 PM Page 3 of 9	FL Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 654377.82.LB	SW601 SW601 SW1	W8015- SW8015 0F/602 SW6010 0B/602 625M-L 00-Fe- SM2540 RSK175 RSK175 A2320 504. 300.	Date/Time Type Matrix # Containers Preserv 0 1 8 2 9 W 0 0 T 0 0 W	Field Filtered: 1 4'C C C C C C C C C C C C C C C C C C C	Report Carbon Ranges incl. EFH C8-C30 Total Field Filtered: 2 4'C C C C C C C C C C	Field Filtered: 3 HCL pH<24C	Field Filtered: 3 Na2S203, 4'C	Flield Filtered: 3 HCL pH<2 4C	Total Continues
hain of Cu	Project Name SSFL Task Order 582 Project: Project Number 654377.82.LB	ject Manager nple Manager	Turnaround Time 10 Days PO Number 100067101891	Sample ID		sport Carbon Rang	VOCs full list	EDB/DBCP	Report Carbon Ranges	

	Special Instructions:	CH582 PO: 100067101891 CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929		
AND THE RESERVE OF THE PERSON		YTTN:	Sample Custody	and	Michele Castro			
	Shipping Details	Method of Shipment: FedEx	On Ice: yes / no	Airbill No:	Lab Name: CalScience	17. 17.3 Lab Phone: (949) 870-8766		
		1/19/16 1300		Hollo K.B Airbill No:	(17) P (27)	4/0/1/2/1/2/2	7	
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CH2MHILL

COC Number: CALS07191601

Chain of Custody Record

> SW9060 > SW9050 > SW8260BSIM-LL SW8260B SW8015-P SW8015B > sw6010F/6020 > SW6010F 5 sw6010B/6020 SW1625M-LL > SM3500-Fe-D SM2540C **>** RSK175M > RSK175 > E376.2 > A2320B 504.1 > 300.0 H2SO4, pH<2, 4'C NaOH, ZnAc, 4'C HCL pH<2.4C Sample Date/Time Type Matrix # Containers Preserv HCL pH<2 4C HN03, 4'C HN03, 4'C HN03, 4'C 4'C 4°C 4'C 4'C 4'C - 2 က က Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS (530) 570-5084 10:30 19-Jul-16 Project Manager Jeremy Hilliard Sample Manager Jamie Beckett 654377.82.LB 10 Days PO Number 100067101891 Methane, ethane, ethene Ba, B, Ca, Mg, K, Na, Sr ND136GW03S003 Project Name SSFL Turnaround Time Ba, B, Ca, Mg, K, Na, 582 Project Number 1,4-Dioxane LL SO4, CI, NO3, Task Order Ferrous Iron Conductivity Sample ID Alkalinity Sulfide **TOC** C02

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	Special instructions:	CH582 PO: 100067101891 CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929		
		ATTN:	Sample Custody	and	Michele Castro			
	Shipping Details)576 Method of Shipment: FedEx	On ice: yes / no	Airbill No:	Lab Name: CalScience	2 19 (1 Lab Phone: (949) 870-8766		
	1	0251 91/bi/L	//	7/9/16 18.30	1/0/1/0 1/243	772	11111	
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Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB	Susana Field Lab IG GWS								S			
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570	70-5084	And the state of t					SW601	ļ	ļ			
Turnaround Time 10 Days PO Number 100067101891		300.	E376.2	SM25400 RSK1751	00-Fe-I	0B/6020	0F/6020 SW6010E	W8015-F SW8015E	BSIM-LL SW8260B	SW9050	SW9060	
Sample ID Sample Date/Time TDS	Type Matrix # Containers Field Filtered: ☐ 1		2	M 🔲) _		, 🔲					
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C										
Vocs full list	Field Filtered: 3 HCL	HCL pH<2 4C							2			
EDB/DBCP	Field Filtered: 3 Na2S	Na2S203, 4'C										
Report Carbon Ranges	Field Filtered: 3 HCL	HCL pH<2 4C						<u>></u>				
	Total Containers:	31					12.11.11.11.11.11.11.11.11.11.11.11.11.1				The state of the s	···· • • •

		FedEx AIIN: CH582 PO: 100067101891 CH614 PO 100067103941	Sample Custody	and Report Copy to	Michele Castro	66 (208) 660-4929	
	Shipping Details	7/19/16 150 Method of Shipment: F	On Ice: yes / no	Airbill No:	Lab Name: CalScience	719 (8 101) Lab Phone: (949) 870-8766	-
	Date/Time	251 0//6/1/2	+	7/19/11, 15 30 Airbill No:	1/10/1c	127 SING	6 m Altitle
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CHZMIII

COC Number: CALS07191601

CH582 PO: 100067101891 CH614 PO 100067103941 > (208) 660-4929 SW9060 Special Instructions: 5 SW9050 Report Copy to SW8260BSIM-LL > SW8260B SW8015-P SW8015B \$w6010F/6020 > Sample Custody Michele Castro > SW6010F > ATTN: and \$W6010B/6020 > SW1625M-LL > SM3500-Fe-D SM2540C RSK175M > > RSK175 > E376.2 > A2320B 504.1 FedEx Shipping Details 300.0 > Lab Phone: (949) 870-8766 H2SO4, pH<2, 4'C NaOH, ZnAc, 4'C CalScience Sample Date/Time Type Matrix # Containers Preserv HCL pH<2 4C HCL pH<2 4C HN03, 4'C HN03, 4'C HN03, 4'C Method of Shipment: 4'C 4'C 4^cC 4'C On Ice: yes / no Lab Name: Alrbill No: က ო α Field Filtered: Field Filtered: Field Filtered: Field Filtered:[Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: 8 Santa Susana Field Lab Date/Time Project: 3Q2016 SA/PCP & AIG GWS (530) 570-5084 11:30 SD = Matrix Spike Duplicate 19-Jul-16 Chain of Custody Record Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Project Number 654377.82.LB 10 Days 100067101891 ઌૻ Methane, ethane, ethene Ba, B, Ca, Mg, K, Na, Sr ND136GW04S002 Project Name SSFI Turnaround Time MS = Matrix Spike Ba, B, Ca, Mg, K, Na, Relinquished by Relinquished by SO4, CI, NO3, 1,4-Dioxane LL Approved by Received by Received by PO Number Sampled by Conductivity Sample ID Ferrous Iron NDMA - LL Alkalinity Sulfide 700 C02 ž

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Chain of Custody Record COC Number	ir: CALS07191601	U	CHZMII		9/2016	7/19/2016 2:37:20 PM	ľ	Page 7 of 9	<u>ဂ</u>	-	-	
Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS	usana Field Lab GWS											
Project Number 654377.82.LB								**************************************		S		
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-	-5084	one samply come of case in a cycles where preserve restricts to confirm come				SW	SWOUL		S	w8260		
Turnaround Time 10 Days PO Number 100067101891			E376. A2320 504.	RSK175	SM2540	10B/602 1625M-L	SW6010	SW8015	SW8260 SW8015-	BSIM-L	SW906 SW905	
Sample ID Sample Date/Time	Type Matrix # Containers	α.	B 1			L				L		
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VOCs full list	Field Filtered: 3	HCL pH<24C							>			
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C										
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C							<u> </u>			
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	Special Instructions:	CH582 PO: 100067101891	CT0 14 FO 100001 103941		Report Copy to	Jon Freed	(208) 660-4929		
		ATTN:	Sample Custody	-	D W	Michele Castro			
And property and the second se	Shipping Details	Method of Shipment: FedEx	On Ice: yes / no	Airhill No:		Lab Name: Calocience	11/2/m 7/19/16 1942 Lab Phone: (949) 870-8766		
	Date/Time	0051 9///2//		>	251 9/161/4	4 (a) (a) (2)	7/19/16 1873	14.14.6	
SD = Matrix Spike Duplicate	Signatures	Motor Clui	Many Can	Muts Cla	1 DIS		M8000		
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received hy	G parinant	

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SFL 2 65437	Location Santa St Project: 3Q2016 SA/PCP & AIG 7.82.LB	usana Field Lab 3 GWS					man to the second secon				general de la companya de la company		S1	THE RESERVE OF THE PERSON OF T			
roject Manager Jeremy Hilliard ample Manager Jamie Beckett	d t (530) 570-	uniin politikiinde muutuuniin politikuutuu ka ka ka ka ka ka ka ka ka ka ka ka ka	and-actions demonstrates aby an exponential consistence of the constraints of the constra	The second secon			SM3	SW	sw60:	sw60:			w8260	ļ			
urnaround Time 10 Days					RSK17 E376. A2320 504.	RSK175	500-Fe- SM2540	1625M-L	SW6010 10B/602	10F/602	SW8015	SW8260 SW8015)BSIM-L	SW905	SW906		
sample ID	Sample Date/Time	Type Matrix	# Containers	Preserv	2)B	M		L	······································	0			-	0	0	:	
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Alkalinity		Field Filtered:	-	4'C	<u> </u>										<u></u> _		
CO2		Field Filtered:[2	4'C		2										Ц. П	
1,4-Dioxane LL		Field Filtered:[3 HC	HCL pH<2 4C									2				
Methane, ethane, ethene		Field Filtered:	3 5	HCL pH<2 4C													
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	- I	HNO3, 4'C						<u>S</u>						<u>.</u>	
And a second control of the second control o		Field Filtered:	Ŧ	HNO3, 4'C					<u>></u>								
Ferrous Iron		Field Filtered:	-	4'C			<u> </u>									<u>L</u>	
SO4, Cl, NO3, F	The state of the s	Field Filtered:		4'C	<u> </u>											<u>Ц.</u>	
Conductivity		Field Filtered:	-	4'C			밁							2			+·
Sulfide	The street of th	Field Filtered:	1 NaOl	NaOH, ZnAc, 4'C													
100		Field Filtered:	1 H2SC	H2SO4, pH<2, 4'C											<u>></u>		_ 11
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	- X	HNO3, 4'C					<u>></u>								
NDMA - LL		Field Filtered:	2	4'C				3							레		· · · · · · · · · · · · · · · · · · ·
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Chain of Custody Record

Page 9 of 9

Lab Phone: (949) 870-8766 Lab Name: CalScience

Shipping Details

Date/Time

SD = Matrix Spike Duplicate

MS = Matrix Spike

Approved by

Sampled by

Relinquished by

Relinquished by Received by

Received by

Method of Shipment: On Ice: yes / no

Airbill No:

Location Santa 302016 SA/PCP & A	Susana Field Lab IG GWS											Sī	THE RESIDENCE OF THE PARTY OF T		
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-	-5084	THE REST OF THE PROPERTY OF TH	antoconfiguration and the second seco			26122	<u> </u>	sw601	\$W601		s	#8260			
Turnaround Time 10 Days PO Number 100067101891			A23207 504.	E376.	RSK1751	00-Fe-I SM25400	625M-LI	0B/6020	OF/6020 SW6010E	SW8015E	SW8260E W8015-E	BSIM-LI	SW9050	SW9060	
	Type Matrix # Containers	Preserv	1 :											[
TDS	Field Filtered: 1	4'C				2									
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proprieta quantum menter en contratation de l'annamentation de l'annamentation de l'annamentation de l'annament	Field Filtered:[] 3 H	HCL pH<2 4C									<u>></u>				
EDB/DBCP	Field Filtered: 3 N	Na2S203, 4'C	<u> </u>												
Report Carbon Ranges	Field Filtered: 3 H	HCL pH<2 4C									5				
	Total Containers:	31		aliciani de la companione de la companio											

WORK ORDER NUMBER: 16-07- 1295

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 3

CHZMHILL	D.	ATE: 07 /	19 1	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3· 7· °C (w/ □ Sample(s) outside temperature criteria (PM/APM contacted by: □ □ Sample(s) outside temperature criteria but received on ice/chilled on san □ Sample(s) received at ambient temperature; placed on ice for transport by contacted temperature. □ Air □ Filter	CF): 3. + °C) me day of sampling		□ Samp	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Present but Not Pres			d by: <u>{</u> d by: <u></u> [6	~
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete			No	N/A
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers ☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ Sampler's name indicated on COC] No relinquished tir	me 🗹		
Sample container label(s) consistent with COC		🗹		
Sample container(s) intact and in good condition				
Proper containers for analyses requested		♂		
Sufficient volume/mass for analyses requested		🗗		
Samples received within holding time		🗗		
Aqueous samples for certain analyses received within 15-minute holding ti	me			ار
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen		🗖 🔎		
Proper preservation chemical(s) noted on COC and/or sample container		🛮		
Unpreserved aqueous sample(s) received for certain analyses				
□ Volatile Organics □ Total Metals □ Dissolved Metals			/	
Container(s) for certain analysis free of headspace		🗆	Ø	
☑ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxyge	n (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen S	ulfide (Hach)			_
Tedlar™ bag(s) free of condensation		🗖		
	Trip Blank Lot Nun	nber:	/ 9.)
Aqueous: VOA VOAh VOAna2 □ 100PJ □ 100PJna2 □ 125AGB □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBnc □ 500PB □ 1AGB □ 1AGBna2 □ 1AGBs □ 1PB □ 1PBna □ 250PBn Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ EnCores® () Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other M	□ 500AGB □ 500A □ □) □ TerraCore	AGJ □ 500/ □ es [®] ()	AGJs 🦠	
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = P	Plastic, and Z = Ziploc/	Resealable B	Bag	1000
Preservative: \mathbf{b} = buffered, \mathbf{f} = filtered, \mathbf{h} = HCI, \mathbf{n} = HNO ₃ , \mathbf{na} = NaOH, $\mathbf{na_2}$ = Na ₂ S ₂ O	p_3 , $p = H_3PO_4$, Lab	eled/Check	ed by: _	1093
$s = H_2SO_4$, $u = ultra-pure$, $znna = Zn(CH_3CO_2)_2 + NaOH$		Reviewe	ed by	1/10/7

WORK ORDER NUMBER: 16-07- 1295

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SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

LIENT: CHZMH	îu l	DAT	E: 07 /	19 1	2016
Thermometer ID: SC1B (☐ Sample(s) outside t ☐ Sample(s) outside t	a: 0.0°C – 6.0°C, not frozen except sediment/tissue) CF: 0.0°C); Temperature (w/o CF): 3.8 °C (w/ CF): 3.8 emperature criteria (PM/APM contacted by:) emperature criteria but received on ice/chilled on same day of samp ambient temperature; placed on ice for transport by courier Air □ Filter			□ Samp	
CUSTODY SEAL: Cooler □ Present Sample(s) □ Present				ed by: <u>{</u> ed by: <u>{</u>	- \
COC document(s) receiv	document(s) received with samples		Yes	No	N/A
☐ No analysis request Sampler's name indicate Sample container label(st Sample container(s) inta Proper containers for an Sufficient volume/mass f	Sampling time				
Aqueous samples for	certain analyses received within 15-minute holding time lorine Dissolved Sulfide Dissolved Oxygen mical(s) noted on COC and/or sample container s sample(s) received for certain analyses			0	0
☐ Volatile Organics Container(s) for certain a ☐ Volatile Organics	□ Total Metals □ Dissolved Metals analysis free of headspace □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) M 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		. 🗆		, _□
Tedlar™ bag(s) free of o	ondensation(Trip Blank Lot				
☐ 125PBznna ☐ 250A0 ☐ 500PB ☐ 1AGB ☐ 6 Solid: ☐ 4ozCGJ ☐ 8ozAir: ☐ Tedlar™ ☐ Canii Container: A = Amber, B = Preservative: b = buffered	Ah	□ 125A 500AG. □ Cores [®]): □	GBp Ø J □ 500 () sealable Eed/Check	AGJ s] 	053

WORK ORDER NUMBER: 16-07- 12-05 of 103

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER $\frac{3}{}$ OF $\frac{3}{}$

LIENT: CHZMHILL DAT	E: 07 /	<u> </u>	/ 2010
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3 · 4 °C (w/ CF): 3 · 4 °C; ☑ Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: ☐ Air ☐ Filter	Blank E		
CUSTODY SEAL: Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked Checked		
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			0
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		Ø	
Tedlar™ bag(s) free of condensation	er:	O COSTO)
Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 125A □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PBn □ 500AGB □ 500AGB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ 250PB₁ □ □ □ □ Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ □ □ Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ □ □ Other Matrix (□ □ □ □ □ □ Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Res Preservative: b = buffered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, □ Labele s = H₂SO₄, u = ultra-pure, znna = Zn(CH₃CO₂)₂ + NaOH	. □ 500A . □ □ . ()]sealable Ba	ag ed by:	1053

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WORK ORDER NUMBER: 16-07 Page 103 of 108

SAMPLE ANOMALY REPORT

DATE: 07 / // / 2016

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☐ Insufficient sample amount for requested analysis (list analysis)	
☐ Improper container(s) used (list analysis)	
☐ Improper preservative used (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)	
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	
☐ Client sample label(s) do not match COC (comment)	
☐ Project information	
☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	
☐ Air sample container(s) compromised (comment)	
□ Flat	
☐ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
□ Leaking (transferred into ECI Tedlar™ bags*)	
☐ Leaking (transferred into client's Tedlar™ bags*)	
* Transferred at client's request.	
MISCELLANEOUS: (Describe)	Comments
HEADSPACE:	
(Containers with bubble > 6 mm or 1/4 inch for volatile organic or dissolved gas analysis)	(Containers with bubble for other analysis)
ECI ECI Total ECI ECI Total	ECI ECI Total Sample ID Container ID Number** Requested Analysis
Sample ID Container ID Number* Sample ID Container ID Number* 2	2-5 V 1 Perrous Iron
5 6,2 12	
Comments:	me?
Training to the state of the st	Reported by: 1053 Reviewed by: 106
for the affected sample	Reviewed by: 10 1



Calscience



WORK ORDER NUMBER: 16-07-1296

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/01/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name: 3	Q2016 SA/PCP	& AIG GWS /	654377.82.LB
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Work Order Narrative

Work Order: 16-07-1296 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/19/16. They were assigned to Work Order 16-07-1296.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.





Sample Summary

Client: CH2M HILL Work Order: 16-07-1296

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/19/16 18:43

Received:

Number of 34

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR08GW01S007	16-07-1296-1	07/19/16 09:30	20	Aqueous
HAR11GW01S007	16-07-1296-2	07/19/16 12:00	7	Aqueous
RD49CGW01S006	16-07-1296-3	07/19/16 12:00	7	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1296				Page 1 of 1
Method	Extraction	Chemist ID	<u>Instrument</u>	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 9	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	735	ACA 1	1
EPA 8015B (M)	EPA 3510C	607	GC 46	1
EPA 8015B (M)	EPA 5030C	715	GC 24	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	960	HPLC 7	1
SM 4500 H+ B	N/A	650	PH 1	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1296 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.

- % Recovery and/or RPD out-of-range. Ζ
 - Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Page 1 of 2

7/19/2016 2:42:07 PM



Chain of Custody Record	COC Number.		CALS07191602		CH2MHIL	딀	7/19/2016 2:42:07 PM	16 2:42	.07 PA		Page 2	of 2			
roject Name SSFL Location Santa Susana ask Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB	Location Santa Sus 016 SA/PCP & AIG G	Susana Field Lab G GWS	Lab					A series and the following and the series of	SW82	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	est manager of the control of the co				
	(530) 570-5084	0-5084			82	SM450	5			,	s				
urnaround Time 10 Days PO Number 100067103941	***************************************				70CSIM 300.0	00NH3F E314.1	08015B 5W6850 25M-LL	3015-P	IM-LL 18260B	18330A	W9040				
Sample ID San	Sample Date/Time	Type Matrix	rix # Containers	ainers Preserv)										
HAR11GW01S007 19-	19-Jul-16 12:00	0 N Water	ē]	[II.	
Nitrobenzene, 1,3-dinitrobenzene		Field Filtered:	_	2 4'C						<u> </u>] [] [] []]] [] [] [] [
Ammonia		Field Filtered:	ered:	1 H2SO4, pH<2, 4'C		<u></u>] [
incl. Pthalates		Field Filtered:		2 4'C	>										
Perchlorate		Field Filtered:	ered:	1 4'C		<u> </u>] [] [] [] [] [] [] [
Perchlorate - HOLD	The state of the s	Field Filtered:	ered:	1 4'C			<u>5</u>								
- Agricultura - 1 Companier - Americania (m. 17 Mangaper (f.) - 1999) - 1999		1	Total Containers	ners: 7										-	
RD49CGW01S006 19-	19-Jul-16 12:00	00 N Water	ter	9			!]	.[]	<u>]</u>].	Ţ
Nitrobenzene, 1,3-Dinitrobenzene		Field Filtered:	П	2 4'C						> (_] [
Ammonia		Field Filtered:[lered:	1 H2SO4, pH<2,	2, 4'C	S] <u> </u> [
incl. Pthalates		Field Filtered:	tered:	2 4'C	S										
Perchlorate	A CONTRACTOR OF THE CONTRACTOR	Field Fill	Field Filtered:	1 4'C		<u> </u>] [
Perchlorate - HOLD		Field Fil	Field Filtered:	1 4'C			3				=	 			
			Total Containers	iners: 7											<u>-</u>
MS = Matrix Spike SD = Matrix Spike Duplicate	Duplicate										ŭ	ocial Ins	Special Instructions	•	-
Approved by Manager		Date/Time //19/16 15	SQC Metho	Shippir Method of Shipment:	Shipping Details pment: FedEx				ATTN:		; 00	CH582 PO CH614 PO	PO: 100067101891 PO 100067103941	01891	
Sampled by		7	On Ice:	: yes / no				Sar	Sample Custody	stody					
Received by	6	7/19/16	Ajrbill No:	No: ame: CalScience	ince			, N	and Michele Castro	astro	Ž	Report Copy to	py to Jon Freed	773	
Relinquished by	Pake 7	(0)(0) (0)(0)	Lab P		(949) 870-8766				2			(2	(208) 660-4929	929	
	+														

WORK ORDER NUMBER: 16-07-1296

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SAMPLE RECEIPT CHECKLIST COOLER ___ OF ___

LIENT: CHZMHILL D	ATE: 07	1 <u>19</u> 1	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 °C Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter		□ Samp	
CUSTODY SEAL: Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A		ed by: ed by:	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete □ Sampling date □ Sampling time □ Matrix □ Number of containers	Yes 🗾	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished tire Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested			0 0 0 0
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen	🗖		
Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses □ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500)	_		_
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation	D		
CONTAINER TYPE: Aqueous: VOA VOAh VOAna2 100PJ 100PJna2 125AGB 125AGBh mber: 25AGBp	7125PB 0AGJs)	

Calscience

WORK ORDER NUMBER: 16-07 48(σ) 48(σ) 48(σ)

SAMPLE ANOMALY REPORT

DATE: 07 / 19 / 2016

SAMDI ES	CONTAINE	RS AND	LABELS			Comment	:s		
	NOT RECEI								
	received but								
	ne expired (lis				reie)		· · · · · · · · · · · · · · · · · · ·		
7	ne expired (iis it sample amo					(-2) Re	ceived ap	proximate	ly 400 mL
€				iyələ (ilət ariai	y 313)	for amn			0
	container(s) u								
	preservative u				atific lab)				
	vative noted		label (list a	naiysis and no	outy tab)				
	ontainer(s) no								
	nple label(s) il				ysis)				
☐ Client sar	nple label(s) o	lo not mate	ch COC (co	mment)					
☐ Projec	t information								
☐ Client	sample ID					····			
☐ Samp	ling date and/	or time							
□ Numb	er of containe	r(s)							
☐ Reque	ested analysis	i							
☐ Sample of	ontainer(s) co	mpromise	d (commen	t)					
☐ Broke	n								And the second s
□ Wateı	r present in sa	mple conta	ainer						
☐ Air samp	le container(s) comprom	ised (comm	nent)					
☐ Flat									
□ Very	low in volume								
□ Leaki	ng (not transfe	erred; dupl	icate bag s	ubmitted)					
	ng (transferre								
	ng (transferre								
	red at client's requ								
MISCELL	ANEOUS: ([escribe)				Commer	nts		
141100000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,							
HEADSP	ACE: th bubble > 6 mm		valatila organi	o or discolved as	e analysis)	(Containers w	ith bubble for othe	r analysis)	dari wana kumisi kulonga kaji sefizu fi sefizika kumini menekata kate fi senten akan aka mana menementu uda se
	ECI	Total	ECI	ECI	Total	ECI	ECI	Total	
ECI Sample ID	Container ID	Number**	Sample ID	Container ID	Number**	Sample ID	Container ID	Number**	Requested Analysis
		 					·		
		-							
							1		
Comments	i:								3.4
								_	Reported by: 1017
** Depart the	total number of co	ontainers (i e	vials or bottle	s) for the affected	I sample.			F	Reviewed by: $\sqrt{\sqrt[4]{1}}$



Calscience



WORK ORDER NUMBER: 16-07-1378

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Ćarmichael Rd

Montgomery, AL 36106-2801

Rund Villas

Approved for release on 08/01/2016 by:

Richard Villafania Project Manager



Email your PM)

ResultLink >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



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Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Work Order Number: 16-07-1378

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3	Client Sample Data. 3.1 RSK-175M Carbon Dioxide (Aqueous). 3.2 RSK-175M Dissolved Gases (Aqueous). 3.3 EPA 300.0 Anions (Aqueous). 3.4 SM 2320B Alkalinity (Aqueous). 3.5 SM 2510 B Specific Conductance (Aqueous). 3.6 SM 2540 C Total Dissolved Solids (Aqueous). 3.7 SM 3500-FeB Ferrous Iron (Aqueous). 3.8 SM 4500 S2 - D Sulfide (Aqueous). 3.9 SM 5310 B Total Organic Carbon (Aqueous). 3.10 EPA 8015B (M) C8-C40 (Aqueous). 3.11 EPA 8015B (M) TPH Gasoline (Aqueous). 3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous). 3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous). 3.14 EPA 1625C (M) NDMA (Aqueous). 3.15 EPA 504.1 EDB and DBCP (Aqueous). 3.16 EPA 8260B Volatile Organics (Aqueous). 3.17 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 7 9 10 11 12 13 14 15 18 20 22 24 26 27 48
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 Sample Duplicate. 4.4 LCS/LCSD.	50 50 61 62 68
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Work Order Narrative

Work Order: 16-07-1378 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/20/16. They were assigned to Work Order 16-07-1378.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1378

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/20/16 18:30

Received:

Number of 133

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2448Q001	16-07-1378-1	07/20/16 07:00	9	Aqueous
ND133GW01S002	16-07-1378-2	07/20/16 09:30	31	Aqueous
ND133GW02S002	16-07-1378-3	07/20/16 10:30	31	Aqueous
ND133GW03S002	16-07-1378-4	07/20/16 11:30	31	Aqueous
ND133GW04S002	16-07-1378-5	07/20/16 12:30	31	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1378				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	834	IC 9	1
EPA 300.0	N/A	1037	IC 9	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	682	GC 46	1
EPA 8015B (M)	EPA 5030C	902	GC 1	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 11	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



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Glossary of Terms and Qualifiers

Work Order: 16-07-1378 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without furthe clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

% Recovery and/or RPD out-of-range. Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

> Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

> Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

COC Number: CALS07201601

Chain of Custody Record

Project Name SSFL Task Order 582 Project 3C Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location Santa Susana Field Lab Project 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard (530) 570-5084	SW6	SW82
Turnaround Time 10 Days PO Number 100067101891			SW9 SW9 260BSIM SW82
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	15B 020 10F 020 -LL e-D 40C 75M 175	050 -LL
CAQW2448Q001	20-Jul-16 7:00 N Water		
1,4-Dioxane LL	Field Filtered 3 HCL pH<24C		
VOCs full list	Field Filtered 3 HCL pH<24C		
Report Carbon Ranges	Field Filtered 3 HCL pH<24C		
	Total Containers: 9		

MS = Matrix Spike SD = Matrix Spike Duplicate			
Signatures	Shipping Details		Special Instructions:
Approved by Shipment:	FedEx	ATTN:	CH582 PO: 100067101891
Sampled by		-	CH614 PO 100067103941
Relinquished by	00 / 2	Sample Custody	
Received by Received by Will William No.	 	and	
Relinquished by $7/2$ Lab Name: CalScience	CalScience	Michele Castro	Jon Freed
Received by ALLAGH 7/20 1930 Lab Ph	1870 Lab Phone: (949) 870-8766		(208) 660-4929
		-	



Chain of Custody Record	rd COC Number	r: CALS07201601	1601			2	I		1/20/	2016	7/20/2016 1:16:44 PM	44 P	S	Pag	Page 2 of	of 9						
Project Name SSFL Task Order 582 Project 3G Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891 Sample ID	Location Santa Susana Project 3Q2016 SA/PCP & AIG GWS 77.82.LB 19 Hilliard 15 Beckett (530) 570-5084 Days 11891 Sample Date/Time Type	Field Lab	# Containers	iners Preserv	300.0	A2320B 504.1	E376.2	RSK175	RSK175M	SM2540C	SW1625M-LL SM3500-Fe-D	SW6010B/6020	SW6010F	SW6010F/6020	SW8015B	SW8015-P	SW8260B	SW8260BSIM-LL	SW9050	SW9060		
ND133GW01S002 Alkalinity	20-Jul-16 9:30	N Water Field Filtered		4'C		<u> </u>																
002		Field Filtered	2	4'C		片			3		耑								旨	Ħ	吊	in
1,4-Dioxane LL		Field Filtered	3	HCL pH<2 4C														2	H		H	
Methane, ethane, ethene		Field Filtered	9	HCL pH<24C				>		F									H	H	H	П
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered	-	HN03, 4'C										2				同	Ħ	H	H	
Mn		Field Filtered	7	HN03, 4'C									>						H			
Ferrous Iron		Field Filtered	-	4'C							3								旨		旨	11
SO4, CI, NO3, F		Field Filtered		4'C	<u>S</u>														片	H	H	
Conductivity		Field Filtered		4'C															<u>S</u>	局		
Sulfide		Field Filtered		NaOH, ZnAc, 4'C		H	2			冒	H								情	片	旨	
T0C		Field Filtered	1	H2SO4, pH<2, 4'C															Ħ	2	H	
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered	-	HNO3, 4'C								3						后	H	睛	H	lm
NDMA - LL		Field Filtered] 2	4'C							2								H		H	
MS = Matrix Spike SD = Matrix Sign Approved by Sampled by Relinquished by Received by Relinquished by Received by	SD = Matrix Spike Duplicate Signatures Da 720 720 720 720 770	1400 14	Method of SI On Ice: yes Airbill No: Lab Name: Lab Phone:	Shipping Details Shipping Details Method of Shipment: FedE> On Ice: yes / no Airbill No: Lab Name: CalScience Lab Phone: (949) 870-8766	PedEx FedEx 766						ATTN: Sample Custody and Michele Castro	ATTN: ple Cu and hele Co	istod	> 0	S Pe	Special Instruct CH582 PO: 1000 CH614 PO 1000 Report Copy to Jon F (208) 66	Copy (208	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929	ons: 6710 3710 3710 9-49;	: 1189 3941 29		

Signatures	Date/Time Shipping Details	IIIS		Special Instructions:
Approved by	Apply 1485 Method of Shinmont: Fe	7 7 7 7 7	ATTN:	CH582 PO: 100067101891
Sampled by	;	\ 		CH614 PO 100067103941
Relinquished by	The On Ice: yes / no	Sam	Sample Custody	
Received by	14		and	of stand of
d by	7/201	i i	Michele Castro	Jon Freed
Received by	7/7 /16 100 Lab Phone: (949) 870-8766			(208) 660-4929



Chain of Custody Record COC Number	Number: CALS07201601	01601						7/20/2016 1:16:44 PM	16 1:	16:44	PM	ď,	Page 4	of 9					,	
Location ct 3Q2016 SA/F LB iard cett	Santa Susana Field Lab PCP & AIG GWS (530) 570-5084	_							SM3	SW	SW60	SW60.	077.60			SW826				
Turnaround Time 10 Days PO Number 100067101891				300.	A2320	E376.	RSK17	SM2540 RSK175	500-Fe-	1625M-I	10B/602	10F/602 SW6010	SW8015	SW8015-	SW8260	OBSIM-I	SW905	SW906		
Sample ID Sample Date/Time	/Time Type Matrix	# Containers	ainers Preserv	0	-		75			Ľ)B	ιL	0	50		
ND133GW02S002 20-Jul-16	10:30 N Water																			
Alkalinity	Field Filtered		4'C		2															
CO2	Field Filtered	1 2 D	4'C					2												
1,4-Dioxane LL	Field Filtered	3	HCL pH<2 4C		П											2				
Methane, ethane, ethene	Field Filtered	g □ 1	HCL pH<2 4C				2	片				H	H					H		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered	<u>-</u>	HN03, 4'C									<u> </u>							H	
Mn	Field Filtered	<u>-</u>	HN03, 4'C									5						듬	H	
Ferrous Iron	Field Filtered	<u>-</u>	4'C						3			H						H	H	
SO4, Cl, NO3, F	Field Filtered	7	4'C	>				H										H	H	
Conductivity	Field Filtered	1 1	4'C									H					>			П
Sulfide	Field Filtered		NaOH, ZnAc, 4'C		H	2		H				H								
100	Field Filtered	1	H2SO4, pH<2, 4'C					H										<u>></u>		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered	1 0	HN03, 4'C					H			<u>_</u>							H	H	
NDMA - LL	Field Filtered	2 🗆	4'C		П					>								П	П	
MS = Matrix Spike SD = Matrix Spike Duplicate	ej																			and the same of th
Signatures	Date/Time		Shipping Details	Setails									Š	ecia	l Ins	truct	Special Instructions:	٠,,		
Approved by Sampled by	1/20/1c 1400	Method	Method of Shipment:	FedEx	J					ATTN:	Ë		<u> </u>	4582 4614	9.0	100 000	CH582 PO: 100067101891 CH614 PO 100067103941	3941		
Relinquished by	7/20/16	On Ice:	yes / no						Sa	Sample Custody	Custo	ody								
Relinquished by Received by	7/20/16 1/30/77 7 18/0	Airbill No: Lab Name: Lab Phone:	vo: me: CalScience one: (949) 870-8766	99/					Σ	and Michele Castro	and ele Casi	£1	_ <u>~</u>	pod	(20,	Report Copy to Jon F (208) 66	Jopy to Jon Freed (208) 660-4929	29		

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Chain of Custody Record COC Number:	tber: CALS07201601	THERE	(李子子)	Page 5 of 9
Project Name SSFL Location Santa Susana Task Order 582 Project 3Q2016 SA/PCP & AIG GW/Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10 Days PO Number 100067101891 Sample Date/Time Typic Sample ID	s Field Lab S Matrix # Containers	RSK175 E376.2 A2320B 504.1 300.0	SW6010F/6020 SW6010F SW6010B/6020 SW1625M-LL SM3500-Fe-D SM2540C RSK175M	SW9060 SW9050 SW8260BSIM-LL SW8260B SW8015-P SW8015B
TDS	Field Filtered 1 4'C			
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered 2 4'C			
VOCs full list	Field Filtered 3 HCL pH<2 4C	<2 4C		
EDB/DBCP	Field Filtered 3 Na2S203, 4'C	3,4'C		
Report Carbon Ranges	Field Filtered 3 HCL pH<24C	<24C		
	Total Containers:	31		
New YORK COLUMN				

MS = Matrix Spike SD = Matrix Spike Duplicate	9			
Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	7/20/12 M.00	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	2/20/16	On Ice: ves / no	Sample Custody	CH614 PO 100067103941
Relinquished by	7/24/16	Airhill No.	Sample Custous	
Received by EQ	7(20(10 M&	Alfolii NO.	and	Report Copy to
Relinquished by	7/20/18 1870	BO Lab Name: CalScience	Michele Castro	Jon Freed
Received by	4/2/10 11/J	7/6/16 101 Lab Phone: (949) 870-8766		(208) 660-4929

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Chain of Custody Record	COC Number:	CALS07201601		THEATER				7/20/2016 1:16:45 PM	16 1:	16:45	PM S	Φ.	Page 6 of	of 9						
FL 65437 Jeren Jamie	Location Santa Susana Findiact 3Q2016 SA/PCP & AIG GWS 77.82.LB by Hilliard (530) 570-5084	sana Field Lab 3WS 1084								SW16					S	SW8260E				
PO Number 100067101891 Sample ID	Sample Date/Time Type	Matrix # Containers	ners Preserv	300.0	A2320B	E376.2	RSK175	SM2540C RSK175M	00-Fe-D	525M-LL)B/6020	F/6020 SW6010F	SW8015B	√8015-P	W8260B	BSIM-LL	SW9050	SW9060		
ND133GW03S002	20-Jul-16 11:30 N	Water																		
Alkalinity	Field	Field Filtered 1	4'C		2															
005	Field	Field Filtered 2	4'C					S												
1,4-Dioxane LL	Field	Field Filtered 3	HCL pH<2 4C											빌		3				
Methane, ethane, ethene	Field	Field Filtered 3	HCL pH<2 4C				2	H												
Ba, B, Ca, Mg, K, Na, Sr	Field	Field Filtered 🗸	HNO3, 4'C										>	Щ						
Mn	Field	Field Filtered 🗸	HN03, 4'C									>								
Ferrous Iron	Field	Field Filtered 🗸	4'C						>			H								
SO4, CI, NO3, F	Field	Field Filtered 1	4'C	<u>></u>								H		片						
Conductivity	Field	Field Filtered 1	4'C									H	片	Ц			2			
Sulfide	Field	Field Filtered 1	NaOH, ZnAc, 4'C			2						H		Ш						
100	Field	Field Filtered 1	H2SO4, pH<2, 4'C															2		
Ba, B, Ca, Mg, K, Na, Sr	Field	Field Filtered 1	HNO3, 4'C								<u>></u>	H								
NDMA - LL	Field	Field Filtered 2	4'C							3		H								
Spike	SD = Matrix Spike Duplicate		Shipping Details	etails									S	oecia	l lns	truc	Special Instructions:			
Approved by Sampled by Relinquished by	7/20/12	Method On Ice:	Method of Shipment: On Ice: yes / no	FedEx					Sa	AT mple	ATTN: Sample Custody	ody	55	H582 H614	90	100	CH582 PO: 100067101891 CH614 PO 100067103941	1018 039	4 1	
Received by Received by		Airbill No: Right o: ne: CalScience ne: (949) 870-8766	99,					Σ	a ichelk	and Michele Castro	ţţ.	<u>~</u>	Report Copy to Jon F (208) 66	(2 (2 (3	py tc Jon 38) 6	Sopy to Jon Freed (208) 660-4929	d 929			



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Chain of Custody Record COC Numb	ber: CALS07201601			\$	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		:0/20	7/20/2016 1:16:45 PM	6:45	NC	Pag	Page 7 of 9	0				
Project Name SSFL Location Santa & Task Order 582 Project 3Q2016 SA/PCP & Alt Project Number 654377 82 LB	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS																
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	70-5084							SM3		CW(O	SW60			SW826			
Turnaround Time 10 Days PO Number 100067101891				A232	E37	RSK1	SM25	500-F	1625M-	SW601	10F/60	SW801	SW8015	OBSIM-	SW90	SW90	
Sample ID Sample Date/Time	e Type Matrix #Containers	iners Preserv	0.0		6.2			e-D			020	L5B				060	
TDS	Field Filtered 1	4'C					S										
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered 2	4'C										2			Щ		
VOCs full list	Field Filtered 3	HCL pH<2 4C												>			
EDB/DBCP	Field Filtered 3	Na2S203, 4'C											H	片			
Report Carbon Ranges	Field Filtered 3	HCL pH<2 4C											5				
	Total Containers:	ers: 31															

	ATTN: CH582 PO: 100067101891	Sample Custody	and Report Copy to Michele Castro	Z)
	Shipping Details Method of Shipment: FedEx	On Ice: yes / no	7/20/6 14.50 Airbill No:	$\frac{1}{2}\sqrt{30}$ Lab Phone: (949) 870-8766
Spike Duplicate	e/Time	1/36/1	Airbill No:	18 1830 1830 1830
MS = Matrix Spike SD = Matrix Spike Duplica	Approved by	Sampled by Relinquished by	Received by	Received by



Chain of Custody Record	COC Number:	CALS07201601	2		THERE	S		7/2	0/2016	7/20/2016 1:16:45 PM	.45 P		Page	8 of	6					
Project Name SSFL Task Order 582 Project 3Q201 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891	Location Santa Susana Project 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard 1 Beckett (530) 570-5084 Days	Santa Susana Field Lab P & AIG GWS 330) 570-5084			300	A232	E376	RSK17	SM254	SM3500-Fe	SW6010B/60 SW1625M-	SW601	SW6010F/60	SW8015 SW801	SW826	SW8260BSIM-	SW90	SW90		
Sample ID Sar	Sample Date/Time	Type Matrix #Cc	# Containers	ers Preserv					0C			0F					50	60		
104\$002	20-Jul-16 12:30	N Water		00.11																
Alkalinity		Field Filtered	-	4'C		2								H						
005		Field Filtered	2	4'C				<u>S</u>												
1,4-Dioxane LL		Field Filtered	9	HCL pH<2 4C												>				
Methane, ethane, ethene		Field Filtered	က	HCL pH<2 4C				<u>\</u>							H					
Ba, B, Ca, Mg, K, Na, Sr	THE PROPERTY OF THE PROPERTY O	Field Filtered	-	HN03, 4'C									2	H						
Mn		Field Filtered	-	HN03, 4'C								>		H						
Ferrous Iron	Accordance to the control of the con	Field Filtered	-	4'C						>										
SO4, CI, NO3, F		Field Filtered	_	4'C	2									П						
Conductivity		Field Filtered	-	4'C													>			
Suffide		Field Filtered	-	NaOH, ZnAc, 4'C			3													
100		Field Filtered	_	H2SO4, pH<2, 4'C														>		
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered	-	HN03, 4'C						H	<u>></u>			H						
NDMA - LL		Field Filtered	2	4'C							2				Ш					
MS = Matrix Spike SD = Matrix Spike Duplicate Approved by Sampled by Relinquished by Received by Relinquished by Received by	Duplicate Population Populat	M. W.	Method of S On Ice: yes Airbill No: Lab Name: Lab Phone:	Shipping Details Shipping Details On Ice: yes / no Airbill No: Lab Name: CalScience Lab Phone: (949) 870-8766	Details FedEx 766					Samı	ATTN: Sample Custody and Michele Castro	Istody	:	Special Instructions: CH582 PO: 100067103841 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929		Instructions: -O: 1000671018 -O 1000671039 -O 1000671039 -O 100671039 -O 100671039	structions : 10006710 10006710 py to Jon Freed 08) 660-49	s: 1018 0394 d 929	11 1	



mpl	mber: a Susa AIG GV 570-500	ainers Preser	RSK175	SW6010B/6020	SW1625M-LL	SW6010F	SW8015-P	SW8260BSIM-LL SW8260B	SW9050 🔲 🖸	SW9060 🗍 🗂
Report Carbon Ranges incl. EFH C8-C30 Total VOCs full list	Field Filtered	2 4°C 3 HCL pH<2 4C						\		
EDB/DBCP Report Carbon Ranges	Field Filtered	3 Na2S203, 4'C 3 HCL pH<2 4C						!		
	Total Containers	ainers: 31				***************************************				

Signatures	Date/Time Shipping Details		Special Instructions:
Approved by	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by Relinquished by	7/20/1/2 On Ice: yes / no	Sample Custody	CD614 TO 10006/105841
Received by	7/20/11, 14.00 Airbill No:	and	Report Copy to
Relinquished by	7/20 11. 1930 Lab Name: CalScience	Michele Castro	Jon Freed
Received by	7/2//6 1820 Lab Phone: (949) 870-8766		(208) 660-4929

WORK ORDER NUMBER: 16-07€ 98 97 97

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 3

CLIENT: CH2M HILL	DATE: 07 / 20 / 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3, 4 °C (w/ CF): 3, 4 °C (w/ CF): 5, 4 °C (w/ CF): 5, 4 °C (w/ CF): 6 °C (w/ CF): 7, 4 °C (w/ CF	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	1011
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time	
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)	
Tedlar™ bag(s) free of condensation (Trip Blank Lot Not Not Not Not Not Not Not Not Not N	Number:) 125AGBp
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix (loc/Resealable Bag



WORK ORDER NUMBER: 16-07€ 99 37461

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 3

CLIENT: CHZM HILL	DATE: 07 /	<u>20 / 201</u>	16
TEMPERATURE: (Criteria: 0.0°C - 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3. © °C (w/ CF): 3. © °C (w/ CF): 3. © °C (w/ CF): 6.0°C) Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	pling	⊐ Sample d by: <u></u> & V ∪	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N	N/A Checker	d by: <u>804</u> d by: <u>1017</u>	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers		No N//]
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquish Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace			-
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation CONTAINER TYPE: (Trip Blank Lo	ot Number:		_)
Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ 150PB □ □ Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ EnCores® () □ Ter Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix ()	□ □ = 000 □		
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Preservative: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOH, na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₄ , s = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOH	Labeled/Check	ed by: 1017 ed by: 214	<u>}_</u>

WORK ORDER NUMBER: 16-079 100 301/161

SAMPLE RECEIPT CHECKLIST

cooler <u>3</u> of <u>3</u>

CLIENT: CH2M HILL	DATE: 07 / <u>20</u> / 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3. + °C (w/ CF): 3. + °C (w/ CF): 5. + °C (w/ CF): 5. + °C (w/ CF): 6.0°C); Temperature (w/o CF): 6.0°C); Temperatu	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	1010
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time	
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container	
Unpreserved aqueous sample(s) received for certain analyses ☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace ☐ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)	
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation	
Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	Cores® ()



SAMPLE ANOMALY REPORT

					1 1	
SAMPLES, CONTAINERS, AND LAB	ELS:		Commen	ts		
☐ Sample(s) NOT RECEIVED but listed on	COC					4.44
☐ Sample(s) received but NOT LISTED on	COC					
☐ Holding time expired (list client or ECI sa	mple ID and ana	ılysis)				
☐ Insufficient sample amount for requested	analysis (list an	alysis)				
☐ Improper container(s) used (list analysis)						
☐ Improper preservative used (list analysis)						
☐ No preservative noted on COC or label (I	ist analysis and	notify lab)	***************************************			
☐ Sample container(s) not labeled						
☐ Client sample label(s) illegible (list contain	ner type and ana	alysis)				
☐ Client sample label(s) do not match COC	(comment)					
☐ Project information						
☐ Client sample ID						
☐ Sampling date and/or time			***			
☐ Number of container(s)			***************************************			
☐ Requested analysis			w. 158			
☐ Sample container(s) compromised (comm	nent)					1,2,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,
□ Broken						
☐ Water present in sample container						
☐ Air sample container(s) compromised (co	mment)					
□ Flat			****			
☐ Very low in volume						45
☐ Leaking (not transferred; duplicate ba	g submitted)					
☐ Leaking (transferred into ECI Tedlar™	¹ bags*)				The second secon	
☐ Leaking (transferred into client's Tedla	ar™ bags*)					
* Transferred at client's request.					and the second	
MISCELLANEOUS: (Describe)			Commen	ts		
,						
HEADSPACE:						
(Containers with bubble > 6 mm or ¼ inch for volatile org	anic or dissolved ga	s analysis)	(Containers with	h bubble for othe	r analysis)	
ECI ECI Total ECI	ECI	Total	ECI	ECI	Total	D
Sample ID Container ID Number** Sample ID	Container ID	Number**	Sample ID	Container ID	Number**	Requested Analysis
			2,3,45		1111	Fernas Iron
3 40 12					11	
5 C.D.E.F.HF 12					approximation of the second	
N, O					ar paragrama	
Commonts:			-			
Comments:						Reported by: 1017
** Record the total number of containers (i.e., vials or ho	ttles) for the affected	sample			in the state of th	Reported by: 1017



Calscience



WORK ORDER NUMBER: 16-07-1392

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/01/2016 by:

Richard Villafania Project Manager



ResultLink ▶

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Contents

Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	666267.14.Q3.FW

Work Order Number: 16-07-1392

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2	Sample Summary	4
3	Client Sample Data	5 7 22
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 LCS/LCSD.	24 24 28
5	Sample Analysis Summary	35
6	Glossary of Terms and Qualifiers	36
7	Chain-of-Custody/Sample Receipt Form	37



Work Order Narrative

Work Order: 16-07-1392 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/20/16. They were assigned to Work Order 16-07-1392.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-1392

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of

07/20/16 18:30

32

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
SP881CGW01S005	16-07-1392-1	07/20/16 08:45	8	Aqueous
SP881GGW01S005	16-07-1392-2	07/20/16 12:30	8	Aqueous
SP890CGW01S005	16-07-1392-3	07/20/16 11:30	8	Aqueous
SP890GGW01S005	16-07-1392-4	07/20/16 12:30	8	Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1392				Page 1 of 1
<u>Method</u>	Extraction	Chemist ID	<u>Instrument</u>	Analytical Location
EPA 1625C (M)	EPA 3520C	928	GC/MS III	1
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1392 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Chain of Custody Record		COC Number: CALS07201602	T)	THEST	7/20/2016 1:17:20 PM	Page 1 of 2	16-07-1392	392
Project Name SSFL Task Order 614 Project 3Q2 Project Number 666267,14,Q3,FW	Location Santa Susana Project 3Q2016 SA/PCP & AIG GWS 67.14.Q3.FW	a Field Lab S						
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	_						
Turnaround Time 10 Days PO Number 100067103941				0BSIM-1 SW826				
Sample ID	Sample Date/Time Type	e Matrix # Containers	Preserv	0B				
SP881CGW01S005 2	20-Jul-16 8:45 N	Water						
1,4-Dioxane LL	F.	ld Filtered 3	HCL pH<2 4C	□ > □				The same of the sa
NDMA - LL	Fie	ield Filtered 2	4'C	□ □ □ 3				m
VOCs full list	Fie	ld Filtered 3	HCL pH<2 4C	□ □ ∑ □				
		Total Containers:	æ					
SP881GGW01S005	20-Jul-16 12:30 N	Water						
1,4-Dioxane LL	E E	ld Filtered 3	HCL pH<2 4C	S				
NDMA - LL	F	ield Filtered 🔲 2	4'C					
VOCs full list	Fie	ld Filtered 3	HCL pH<2 4C					
		Total Containers:	8					

Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	2/20/12 1400	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	00h1 11/06/C			CH614 PO 100067103941
Relinquished by	1)2011 1100/C	On ice: yes / no	Sample Custody	
	1 4/18/14 ST	A The lie 18 so	and	Donort Conv. to
No.		Lab Name: CalScience	Michele Castro	Jon Freed
1	100 N	Lab Phone: (949) 870-8766		(208) 660-4929





Chain of Custody Record		COC Number: CALS07201602	Charman Charles	7/20/2016 1:17:20 PM Page 2 of 2
Project Name SSFL Task Order 614 Project 3Q2 Project Number 666267.14.Q3.FW Project Manager Jeremy Hilliard	Location 016 SA/P	sana Field Lab 3WS	SW8	
Sample Manager Jamie Beckett Turnaround Time 10 Days	(530) 570-5084	084	3260BS SW SW162	
PO Number 100067103941			8260	
Sample ID	Sample Date/Time	Type Matrix # Containers Pr	В	
SP890CGW01S005	20-Jul-16 11:30	N Water		
1,4-Dioxane LL		Field Filtered 3 HCL pl	HCL pH<2 4C	
NDMA - LL		Field Filtered 2 4	4'C	
VOCs full list		Field Filtered 3 HCL pl	HCL pH<2 4C	
		Total Containers:	8	
SP890GGW01S005	20-Jul-16 12:30	N Water		
1,4-Dioxane LL		Field Filtered 3 HCLp	HCL pH<2 4C	
NDMA - LL		Field Filtered 2 4	4·c	
VOCs full list		Field Filtered 3 HCL p	HCL pH<2 4C	
	AMANISAN GARRANTAN KANTAN	Total Containers:	8	

MS = Matrix Spike S	MS = Matrix Spike SD = Matrix Spike Duplicate				
Workforth and the second secon	natures	Date/Time	Shipping Details		Special Instructions:
Approved by	E. Blu	1/20/16 1400	7/20/16 1400 Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	- But	Jzelic 1400			CH614 PO 100067103941
Relinquished by		7/20/14 1400	On Ice: yes / no	Sample Custody	
Received by	The self	or h1 91/92/+	Airbill No:	and	Report Copy to
Relinquished by	1	Floste 1850	Lab Name: CalScience	Michele Castro	Jon Freed
Received by		72016 1830	6720 (6 1830 Lab Phone: (949) 870-8766		(208) 660-4929
	240				

WORK ORDER NUMBER: 16-07-90 39 31-412

Caiscience

SAMPLE RECEIPT CHECKLIST

cooler 2 of 2

CLIENT: CH2M HILL	DATE: 07	1201	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7 °C (w/ CF): 3.7 °C (w/ CF): 5.7 °C (w/ CF): 5.7 °C (w/ CF): 5.7 °C (w/ CF): 6.7 °C (w/	9	□ Samp	
	Las de la constitución de la con		
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		ed by: _6 ed by: _6	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time		0 0 0 0 0 0	00000
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	🗖		Ø
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace		Þ	
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation			P
CONTAINER TYPE: Aqueous: VOA VOAh VOAna2 100PJ 100PJna2 125AGB 125AGBh 125AGBh 125PBznna 250AGB 250CGB 250CGBs 250PB 250PBn 500AGB 500AGB 500AGB 100PB	lumber: 125AGBp 00AGJ □ 50 I ores® (): □ oc/Resealable	□ 125PB 00AGJs □) □ Bag	
Container: A = Amber, B = Bottle, C = Clear, L = Envelope, G = Clear, L = Envelope, G = Clear, L = Envelope, G = Clear, L = Clear, L = Envelope, G = Clear, L = Clear, L = Envelope, G = Clear, L = Cl	.apeled/Che	wed by: _	1017

WORK ORDER NUMBER: 16-07090 40 of 492

Calscience

SAMPLE RECEIPT CHECKLIST

COOLER 1 OF 2

CLIEN	NT: CHZM HILL	DATE: 07 / 3	20/2016
TEMI	PERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) mometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 °C (w/ CF): 5.6 9		
	ent Temperature: Air Filter	Checked	by: <u>804</u>
Cool	TODY SEAL: er □ Present and Intact □ Present but Not Intact □ Not Present □ N/A ple(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	Checked Checked	by: <u>404</u> by: <u>601 ·</u>
Chai COC	PLE CONDITION: n-of-Custody (COC) document(s) received with samples document(s) received complete I Sampling date Sampling time Matrix Number of containers		No N/A
Sam Sam Sam Prop Suff Sam	No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished pler's name indicated on COC ple container label(s) consistent with COC ple container(s) intact and in good condition per containers for analyses requested icient volume/mass for analyses requested iples received within holding time	Д Д Д Д	
Prop	Aqueous samples for certain analyses received within 15-minute holding time ☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfide ☐ Dissolved Oxygen ☐ preservation chemical(s) noted on COC and/or sample container ☐ Dissolved aqueous sample(s) received for certain analyses		
Con	Uppreserved aqueous sample(s) received to the control of the cont		
Ted	lar™ bag(s) free of condensation	🗖	
Aqu 1 5 Sol Air:	NTAINER TYPE: Canada VOAh VOAna 100PJ 100PJna 125AGB 125AGBh 125PBznna 250AGB 250CGB 250CGBs 250PB 250PB 500AGB 5000PB 1AGB 1AGBna 1AGBs 1PB 1PBna	125AGBp ☐ 1 00AGJ ☐ 500A ☐ ☐ ☐ cores® ()	25PB AGJs



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SAMPLE ANOMALY REPORT

								Lancov (Marie La	
SAMPLE	S, CONTAIN	ERS, AN	D LABELS	S:		Commen	its	Avada mili oli mo	
☐ Sample((s) NOT RECE	IVED but	listed on CC	C				•	
☐ Sample	(s) received bu	ıt NOT LIS	TED on CO	C					
-	time expired (I				lysis)	, <u>, , , , , , , , , , , , , , , , , , </u>			
	ent sample am								
	er container(s)								
	er preservative					ALL STATES AND STATES			
☐ No pres	ervative noted	on COC o	r label (list :	analysis and r	notify lab)	***************************************			
☐ Sample	container(s) no	ot labeled							
☐ Client sa	ample label(s)	illegible (li:	st container	type and ana	ılysis)				
☐ Client sa	ample label(s)	do not ma	tch COC (ca	omment)					
□ Proj∈	ect information	i							
☐ Clier	nt sample ID								
☐ Sam	pling date and	/or time							
□ Num	ber of containe	er(s)							
□ Requ	uested analysis	s							
☐ Sample	container(s) co	ompromise	∍d (commer	ıt)					
☐ Brok	cen								
□ Wate	☐ Water present in sample container							The state of the s	
☐ Air sample container(s) compromised (comment)									
□ Flat									
☐ Very	low in volume	:							
☐ Leak	king (not transf	erred; dup	licate bag s	ubmitted)					
☐ Leak	king (transferre	d into ECI	Tedlar™ ba	ags*)					
☐ Leak	king (transferre	d into clier	าt's Tedlar™	⁴ bags*)		***************************************			
* Transfe	erred at client's requ	uest.							
MISCELL	ANEOUS: (Describe)				Commen	ıts		
HEADSP	ACE:								
(Containers w	vith bubble > 6 mm	or ¼ inch for	volatile organi	c or dissolved gas	s analysis)	(Containers wi	th bubble for other	r analysis)	
ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis
1	BC	6							
2.	CEF	6							
3	B-F	6						de de la constante de la const	
14	A-F	6						111111111111111111111111111111111111111	
	1		1		<u> </u>	<u>L</u>			
Comments	S:					1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1		D	eported by: 60 ·
					F .			Re	eviewed by: 10 1
** Record the	total number of co	Intainers (i.e.,	, vials or bottles	s) for the affected	sample.			110	sviewed by. Coll



Calscience



WORK ORDER NUMBER: 16-07-1456

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink ▶

Email your PM >

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Contents

Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	654377.82.LB

Work Order Number: 16-07-1456

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3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1456 EPA 8315 Formaldehyde and 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-1456 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/16/16. They were assigned to Work Order 16-07-1456.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL Work Order: 16-07-1456

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/16/16 09:45

Received:

Number of 4

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR05GW01S006	16-07-1456-1	07/15/16 10:00	4	Aqueous



Glossary of Terms and Qualifiers

Work Order: 16-07-1456 Page 1 of 1

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
	Greater than the indicated value.
>	
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Shain of Custody Record	ord COC Number: CALS07151605	CH2MHILL	CH2NHILL 7/15/2016 1:36:10 PM Page 1 of 1	
roject Name SSFL ask Order 582 Project: 3C roject Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS			
Project Manager Jeremy Hilliard	(530) 570-5084			
furnaround Time 10Days		SW831 SW83		
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	15		
HAR05GW01S006	15-Jul-16 10:00 N Water			
Formaldehyde	Fleld Filtered: ☐ 2 4'C	<u> </u>		
Hydrazine, MMH, UDMH	Field Filtered:			
	Total Containers: 4			

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate		77,7		-
	Signatures	1	Shipping Details		Special Instructions:
Approved by	Mark Ly	2/15/16 1600	Method of Shinment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	"Motor Clan			(CH614 PO 100067103941
Relinguished by	Into Cer.	ے ب	On ice: yes ino	sample custody	
Docement by			Airbill No:	and	Report Copy to
Reference by	00		Lab Name: Lancaster Laboratories	Kay Hower	Jon Freed
Received by	Kinstin 14	7164 AGUS	COUSTABLE Phone: (318) 618-8889		(208) 660-4929
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		21/01/12			

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Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

154069

Group Number(s):

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/16/2016 9:45

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

<u>CA</u>

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

No

Sample Date/Times match COC:

Yes

Samples Chilled:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Paperwork Enclosed:

Yes

Total Trip Blank Qty:

0

Samples Intact:

Yes

Air Quality Samples Present:

No

Missing Samples: Extra Samples:

No

No

Discrepancy in Container Qty on COC:

No

Unpacked by Kristin Zeigler (2123) at 11:09 on 07/16/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # Thermometer ID 32170023

Corrected Temp 1.5

Therm. Type IR

Ice Type Wet

Ice Present? Υ

Ice Container Loose

Elevated Temp?

Ν

Calscience

WORK ORDER NUMBER: 16-07- 16-6

SAMPLE RECEIPT CHECKLIST

COOLER	OF

CLIENT:	DA	TE: 07	1	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter			□ Sam	
] N/A] N/A		ed by: ed by:	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers		Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □				
Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time Dissolved Sulfide Dissolved Oxygen		. 🗆		
Proper preservation chemical(s) noted on OOC and/or sample container		. 🗆		
Container(s) for certain analysis free of headspace				
CONTAINER TYPE: (Trip Blank Lo				
Aqueous: □VOA □VOAh □VOAna₂ □100PJ □100PJna₂ □125AGB □125AGBh □125PBznna □250AGB □250CGB □250CGBs □250PB □250PBn □500AGB □ 500PB □1AGB □1AGBna₂ □1AGBs □1PB □1PBna □ □ □ □ Solid: □4ozCGJ □8ozCGJ □16ozCGJ □Sleeve (□ □) □EnCores® (□ □) □Ter Air: □Tedlar™ □Canister □Sorbent Tube □PUF □ □ Other Matrix (□ □ Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH, na₂ = Na₂S₂O₃, p = H₃PO₄, s = H₂SO₄, u = ultra-pure, znna = Zn(CH₃CO₂)₂ + NaOH	☐ 125 <i>A</i> ☐ 500AG ☐ ☐ rraCores [®]): [Ziploc/Re	AGBp J D 500/ C Sealable B Bed/Checker	125PB AGJs	



Subcontractor Analysis Report

Work Order: 16-07-1456 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1456

Submittal Date: 07/16/2016 Group Number: 1683594 SDG: CSF14 PO Number: 16-07-1456 State of Sample Origin: CA

Client Sample Description HAR05GW01S006 Water Lancaster Labs (LL) # 8477962

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience Attn: Terri Chang Electronic Copy To Eurofins Calscience Attn: Richard Villafania

Respectfully Submitted,

Kay Mour Kay Hower

(510) 672-3979

11053 [683594 82177962-

Chain of Custody Record COC Number: CALS07151605	C	H	2N	ÆН	ILL	_ ;	7/15/	/2016	6 1:3	6:10	PM	ļ	Page	1 of 1		
Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084																
Turnaround Time 10 Days PO Number 100067103941 Sample ID Sample Date/Time Type Matrix # Containers F	Preserv	SW8315	SW8315A													
HAR05GW01S006 15-Jul-16 10:00 N Water																
Formaldehyde Field Filtered: 2	4'C		V													
Hydrazine, MMH, UDMH Field Filtered: 2	4'C	V														
Total Containers:	4															

MS = Matrix Spike	SD = Matrix Spike Duplica	te			
Approved by Sampled by Relinquished by Received by Received by Received by	Signatures Mith Clu Motor Clu Knoth Cly	7/15/16 1600 7/15/16 1600 116/16 3/22 7/16/16	Shipping Details Method of Shipment: FedEx On Ice: yes no Airbill No: Lab Name: Lancaster Laboratories Lab Phone: (318) 618-8889	ATTN: Sample Custody and Kay Hower	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to



Lancaster Laboratories
Environmental

Receipt Documentation Log Sample Administration

Doc Log ID:

Group Number(s): \(\(\sigma \sigma \sigma \sigma \sigma \) 154069

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method: Fed Ex Arrival Timestamp: 07/16/2016

Number of Packages: 1-Number of Projects:

1-

State/Province of Origin: CA

Arrival Condition Summary

		No	Discrepancy in Container Qty on COC:
		No	Extra Samples:
		No	Missing Samples:
N _o	Air Quality Samples Present:	Yes	Samples Intact:
	Total Trip Blank Oty: 0	Yes	Paperwork Enclosed:
N/A	VOA Vial Headspace ≥ 6mm.	Yes	Samples Chilled:
Yes	Sample Date/Times match COC:	N _o	Custody Seal Present:
Yes	Sample IDs on COC match Containers:	Yes	Shipping Container Sealed:

Unpacked by Kristin Zeigler (2123) at 11:09 on 07/16/2016

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler# Thermometer ID 32170023 Corrected Temp <u>.5</u> Therm. Type Ice Type Vet Ice Present? Ice Container Loose Elevated Temp?

Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

less than <

greater than >

parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For ppm aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

parts per billion ppb

Dry weight Results printed under this heading have been adjusted for moisture content. This increases the analyte weight basis concentration to approximate the value present in a similar sample without moisture. All other results are reported on an

as-received basis.

Laboratory Data Qualifiers:

- B Analyte detected in the blank
- C Result confirmed by reanalysis
- E Concentration exceeds the calibration range
- J (or G, I, X) estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
- P Concentration difference between the primary and confirmation column >40%. The lower result is reported.
- U Analyte was not detected at the value indicated
- V Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Calscience



WORK ORDER NUMBER: 16-07-1457

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Risand Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & A	AIG GWS / 666	267.14.Q3.FW

Work Order Number: 16-07-1457

1	Work Order Narrative	3
2	Sample Summary	4
3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1457 EPA 8315 Formaldehyde and 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-1457 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/15/16. They were assigned to Work Order 16-07-1457.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-1457

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of

07/15/16 09:10

12

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
RD05CGW01S006	16-07-1457-1	07/14/16 09:30	4	Aqueous
WS04AGW01D006	16-07-1457-2	07/14/16 09:45	4	Aqueous
WS04AGW01S006	16-07-1457-3	07/14/16 09:45	4	Aqueous



Glossary of Terms and Qualifiers

Work Order: 16-07-1457 Page 1 of 1

Qualifiers	Definition
<u>Quaimers</u>	
	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

11053 | (683309) | POCE891 | ESOIL

AS = Matrix Spike	IS = Matrix Spike SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special instructions:
Approved by	Miles Cin	DOD! 11/4//	Method of Shinment: FedEx	ATTN:	CH582 PO: 100067101891
sampled by	Must a				CH614 PO 100067103941
Relinquished by	mutel Chi	6 O	On ice: (yes) no	Sample Custody	andresia e
Received by			Airbill No:	and	tough tough
	0		Lab Name: Lancaster Laboratories	Kay Hower	Jon Freed
Received by	Wash.	7/10/16 DOIL	11 C 11 C 1 Lab Phone: (318) 618-8889		(208) 660-4929
1	The same of the sa			-	
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Turn to Contents

Sample Administration Receipt Documentation Log

Doc Log ID:

153909

Group Number(s): (683209

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

<u>07/15/2016 9:10</u>

Number of Packages:

State/Province of Origin:

2

<u>CA</u>

Number of Projects:

<u>1</u>

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes No

Missing Samples:

No

Extra Samples:
Discrepancy in Container Qty on COC:

No

Unpacked by Kristin Zeigler (2123) at 10:14 on 07/15/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	3.1	IR	Wet	Υ	Loose	N
2	32170023	2.4	IR	Wet	Υ	Loose	N

WORK ORDER NUMBER: 16-07- Page 84f 487

SAMPLE RECEIPT CHECKLIST COOLER ___ OF ___

CLIENT:	DAI	E: 07 /	<u> </u>	2010
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of same] Blank	□ Sampl	e
☐ Sample(s) received at ambient temperature; placed on ice for transport by courier		Chaple	ن داما ام	
Ambient Temperature: ☐ Air ☐ Filter		CHECKE	ed by:	
CUSTODY SEAL:				
	⊐ N/A	Checke	ed by:	
Obolo: Division Divis	⊐ N/A		ed by:	
Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Oncom	· · · · · · · · · · · · · · · · · · ·	
SAMPLE CONDITION:		Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples				/ D
COC document(s) received complete			/	
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers				
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinqui	ished time	and the same of th		
Sampler's name indicated on COC				
Sample container label(s) consistent with COC				
Sample container (s) intact and in good condition				
Sample container(s) intact and in good condition	*			
Proper containers for analyses requested				
Sufficient volume/mass for analyses requested				
Samples received within holding time				
Aqueous samples for certain analyses received within 15-minute helding time				_
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen				
Proper preservation chemical(s) noted on COC and/or sample container				
Unpreserved aqueous sample(s) received to certain analyses				
☐ Volatile Organics ☐ Total Metals ☐ Netals				
Container(s) for certain analysis free of headspace				
☐ Volatile Organics ☐ Dissolved Cases (RSK-175) ☐ Dissolved Oxygen (SM 4500))			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of concensation				
)
CONTAINER TYPE: (Trip Blank L Aqueous: UVOA UVOAh UVOAna2 U 100PJ U 100PJna2 U 125AGB U 125AGB				
Aqueous: VOA VOAN VOAN VOAN				
☐ 500PB ☐ 1AGB ☐ 1AGBna₂ ☐ 1AGBs ☐ 1PB ☐ 1PBna ☐ ☐				
Solid: 40zCGJ 80zCGJ 160zCGJ Sleeve () EnCores® () Tellia Tellia EnCores® ()	 erraCores [®]		П	
Solid: 402CGJ 1802CGJ 11602CGJ 11802CGJ	۱۰ ۲	1		
Air: ☐ Tedlar ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix (
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z				
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na}_2 = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$,	Labele			
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$		Review	ed by:	





Subcontractor Analysis Report

Work Order: 16-07-1457 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1457

Submittal Date: 07/15/2016 Group Number: 1683209 SDG: CSF13 PO Number: 16-07-1457 State of Sample Origin: CA

 Client Sample Description
 (LL) #

 RD05CGW01S006 Water
 8476280

 WS04AGW01D006 Water
 8476281

 WS04AGW01S006 Water
 8476282

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience Attn: Terri Chang Electronic Copy To Eurofins Calscience Attn: Richard Villafania

Respectfully Submitted,

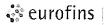
Kay Mour

(510) 672-3979

11053 | 1683209 | 8476280-82

Chain of Custody Rec	ord cod	Numbe	CALS071	41603		C	H	2N	ПH	۱LI		7/14	/201	6 2:4	42:0	6 PN	1	Pag	e 1	of 1				
Project Name SSFL Task Order 614 Project: 3 Project Number 666267.14.Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	3Q2016 SA/PC			1						A Company of the Comp														
Turnaround Time 10 Days PO Number 100067103941	O- weeks Dad	. (7)	Town Madde	# 0			SW8315	SW8315A																
Sample ID			Type Matrix	# Conta	iners	Preserv	-	-														\dashv		
RD05CGW01S006	14-Jul-16	9:30	N Water				-								_							\dashv	_	_
Formaldehyde			Field Filtered			4'C	빝	•			Ш					Ш			Ш			\sqsubseteq	$\overline{}$	Ľ
1,1-DMH, UDMH			Field Filtered	l: <u> </u>		4'C	V																	
			Total	Contain	ers:	4																		
WS04AGW01D006	14-Jul-16	9:45	N Water																					
Formaldehyde			Field Filtered	l: <u> </u>		4'C		•																
1,1-DMH, UDMH			Field Filtered	l: <u> </u>		4'C	V																	
			Total	Contain	ers:	4																		
WS04AGW01S006	14-Jul-16	9:45	N Water									ALIEN SIMBE	Irina P. P. Mario		****									
Formaldehyde			Field Filtered	: 2		4'C		V																
1,1-DMH, UDMH			Field Filtered	: 2		4'C	V																	
			Total	Containe	ers:	4	1																	

MS = Matrix Spike	SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mutal Cleu	7/14/16 1600	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Mut Co				CH614 PO 100067103941
Relinquished by	Mital Clin	V V		Sample Custody	
Received by			Airbill No:	and	Report Copy to
Relinquished by	\sim		Lab Name: Lancaster Laboratories	Kay Hower	Jon Freed
Received by	intin !	7/15/16 0910	Lab Phone: (318) 618-8889		(208) 660-4929



Sample Administration Receipt Documentation Log

Doc Log Bage 17 of 183909

Group Number(s): [683209

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/15/2016 9:10

Number of Packages:

2

Number of Projects:

1

State/Province of Origin:

<u>CA</u>

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

Air Quality Samples Present:

N/A

No

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Yes

Samples Intact: Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Kristin Zeigler (2123) at 10:14 on 07/15/2016

Samples Chilled Details

Thermometer Types:

Page 1 of 1

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	3.1	IR	Wet	Υ	Loose	N
2	32170023	2.4	IR	Wet	Υ	Loose	N

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

less than <

greater than >

parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For ppm aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

parts per billion ppb

Dry weight Results printed under this heading have been adjusted for moisture content. This increases the analyte weight basis concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Calscience



WORK ORDER NUMBER: 16-07-1458

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Work Order Number: 16-07-1458

1	Work Order Narrative	3
2	Sample Summary	4
3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1458 EPA 8315 Formaldehyde and EPA 8315(M) Hydrazines	1



Work Order Narrative

Work Order: 16-07-1458 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/14/16. They were assigned to Work Order 16-07-1458.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1458

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/14/16 09:10

Received:

Number of 8

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
RD05AGW01S006	16-07-1458-1	07/13/16 10:15	4	Aqueous
RD05BGW01S007	16-07-1458-2	07/13/16 13:00	4	Aqueous



Glossary of Terms and Qualifiers

Work Order: 16-07-1458 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis

- The sample extract was subjected to Silica Gel treatment prior to analysis. SG
- Χ % Recovery and/or RPD out-of-range.
- Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

76-568/LLA8 / LLA8891) 25011

16-07-1458

Chain of Custody Record	ord COC Number: CALS07131602	CH2MHILL 7/13/2016 2:18:37 PM Page 1 of 1
Project Name SSFL Task Order 582 Project 30 Project Number 654377.82.LB	Location Santa Susana Field Lab Project 3Q2016 SAPCP & AIG GWS	
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	
Turnaround Time 10 Days PO Number 100067103941		SW8315 SW831
Sample ID	Sample Date/Time Type Matrix # Containers P	
RD05AGW01S006	13-Jul-16 10:15 N Water	
Formaldehyde	Field Filtered 2 4	4°°
1,1-DMH, UDMH	Fleld Filtered 2 4	
	Total Containers:	4
RD05BGW01S007	13-Jul-16 13:00 N Water	
Formaldehyde	Field Filtered 2	400
1,1-DMH, UDMH	Field Filtered 2	
	Total Containers:	4

	Special Instructions:	CH582 PO: 100067101891	CT0 14 FO 100001 103941		Report Copy to	2011 Fleed (208) 660-4929			
		ATTN:	Sample Custody	and	2	Kay Howel			
	Shipping Details	Method of Shipment: FedEx	On ice: (yes) / no	Airbill No:	Lab Name: Lancaster Laboratories	7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	1/4/16 09(10) Law Filding. (318) 318-3333		
	Date/Time	00S1 91/E.1/L		}			01/1/10 00/11/1/1/	-	
IS = Matrix Spike SD = Matrix Spike Duplicate	86	Clan	Into Clus	Mitted War			Kington Ox		,
1S = Matrix Spike		pproved by	ampled by	<u> </u>	Received by	Relinquished by	Received by		

irn to Contents

Sample Administration Receipt Documentation Log

Doc Log ID:

153764

Group Number(s): [682677

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/14/2016 9:10

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

<u>CA</u>

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes

Missing Samples:

No No

Extra Samples:

No

Unpacked by Kristin Zeigler (2123) at 10:10 on 07/14/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # Thermometer ID

32170023

Corrected Temp 4.5

Discrepancy in Container Qty on COC:

Therm. Type IR

Ice Present? Ice Type Wet

Ice Container Loose

Elevated Temp?

Calscience

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST

COOLER	OF

CLIENT:	DATE: 07	/	/ 2016
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):~C (w/ CF): _~C (w/	ing	□ Sam	
CUSTODY SEAL: Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A		ed by: _ ed by: _	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers		No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested		0000	
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted or Color and/or sample container Unpreserved aqueous sample(s) reserved for certain analyses		0	_ _
□ Volatile Organics □ Potal Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation CONTAINER TYPE: (Trip Blank Lot No)
Aqueous: □VOA □VOAh □VOAna₂ □100PJ □100PJna₂ □125AGB □125AGBh □ □125PBznna □250AGB □250CGB □250CGBs □250PB □250PBn □500AGB □50 □500PB □1AGB □1AGBna₂ □1AGBs □1PB □1PBna □ □ □ □ Solid: □4ozCGJ □8ozCGJ □16ozCGJ □Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ □ □ Air: □Tedlar™ □ Canister □ Sorbent Tube □ PUF □ □ □ Other Matrix (□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	00AGJ □ 500A □ ores® ()): □ oc/Resealable B	AGJs	



Subcontractor Analysis Report

Work Order: 16-07-1458 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1458

Submittal Date: 07/14/2016 Group Number: 1682677 SDG: CSF12 PO Number: 16-07-1458 State of Sample Origin: CA

Client Sample Description RD05AGW01S006 Water RD05BGW01S007 Water Lancaster Labs (LL) # 8474395 8474396

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience
Electronic Copy To Eurofins Calscience

Attn: Terri Chang Attn: Richard Villafania

Respectfully Submitted,

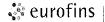
Kay Mour

(510) 672-3979

11053 | 1682677 | 8474395-96

Chain of Custody Recor	d COC N	mber: (CALS071316	602	C	1-1:	2N	MH		7/13	/201	6 2:	18:3	7 PI	Λ	Pag	ge 1	of 1			
Project Name SSFL Task Order 582 Project 3Q: Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location San 1016 SA/PCP & (530)		VS																		
Turnaround Time 10 Days PO Number 100067103941 Sample ID	sample Date/Ti	ne Tyį	pe Matrix #C	ontainers	Preserv	SW8315	SW8315A							:							
			N Water																		
Formaldehyde		F	ield Filtered	2	4'C		V														
1,1-DMH, UDMH		F	Field Filtered	2	4'C	V															
			Total Co	ntainers:	4																
RD05BGW01S007	3-Jul-16 1:	۱ 00:	N Water																		
Formaldehyde	,	F	Field Filtered	2	4'C		V														
1,1-DMH, UDMH		F	ield Filtered	2	4'C	V															
			Total Co	ntainers:	4																

MS = Matrix Spike	SD = Matrix Spike Duplicate	•			
Approved by Sampled by	Signatures Metal Clus Metal Clus	Date/Time -7/13/16 1500	Shipping Details Method of Shipment: FedEx On Ice: yes / no Airbill No: Lab Name: Lancaster Laboratories Lab Phone: (318) 618-8889	ATTN: Sample Custody and Kay Hower	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929



Sample Administration Receipt Documentation Log

Doc Log IDPage 16 953764

Group Number(s): 1682677

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/14/2016 9:10

Number of Packages:

1

Number of Projects:

1

State/Province of Origin:

CA

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes

Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Kristin Zeigler (2123) at 10:10 on 07/14/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler# 1

Thermometer ID

Corrected Temp

Therm. Type

Ice Present? Ice Type

Ice Container

Elevated Temp?

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basisResults printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Calscience



WORK ORDER NUMBER: 16-07-1587

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Richard Villas

Approved for release on 08/03/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Work Order Number: 16-07-1587

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 RSK-175M Carbon Dioxide (Aqueous). 3.2 RSK-175M Dissolved Gases (Aqueous). 3.3 EPA 300.0 Anions (Aqueous). 3.4 SM 2320B Alkalinity (Aqueous). 3.5 SM 2510 B Specific Conductance (Aqueous). 3.6 SM 2540 C Total Dissolved Solids (Aqueous). 3.7 SM 3500-FeB Ferrous Iron (Aqueous). 3.8 SM 4500 S2 - D Sulfide (Aqueous). 3.9 SM 5310 B Total Organic Carbon (Aqueous). 3.10 EPA 8015B (M) C8-C40 (Aqueous). 3.11 EPA 8015B (M) TPH Gasoline (Aqueous). 3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous). 3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous). 3.14 EPA 1625C (M) NDMA (Aqueous). 3.15 EPA 504.1 EDB and DBCP (Aqueous). 3.16 EPA 8260B Volatile Organics (Aqueous). 3.17 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 7 10 13 15 17 19 21 23 25 30 33 37 41 44 46 76
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 Sample Duplicate. 4.4 LCS/LCSD.	79 79 89 90
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Work Order Narrative

Work Order: 16-07-1587 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/22/16. They were assigned to Work Order 16-07-1587.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

EPA 6020: For 7/29/16 data set - Secondary ICV (M120215A.066) was performed after the ICS analysis, opening ICV (M120215A.055) was performed though target analytes were missing. All batch QC is in control, no further action taken.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.

SM 5310 B TOC: One or more samples have a replicate RSD > 10% which is being attributed to suspected matrix interference. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1587

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/22/16 18:00

Received:

Number of 257

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
C5GW04S002	16-07-1587-1	07/22/16 09:30	31	Aqueous
C5GW05D002	16-07-1587-2	07/22/16 09:40	31	Aqueous
C5GW05S002	16-07-1587-3	07/22/16 09:40	31	Aqueous
C5GW06S002	16-07-1587-4	07/22/16 09:50	31	Aqueous
CAQW2456Q001	16-07-1587-5	07/22/16 07:00	9	Aqueous
ND132GW03S002	16-07-1587-6	07/22/16 10:00	31	Aqueous
ND132GW04S002	16-07-1587-7	07/22/16 10:30	31	Aqueous
ND132GW05S002	16-07-1587-8	07/22/16 11:00	31	Aqueous
ND137AGW01S002	16-07-1587-9	07/22/16 10:00	31	Aqueous
C5GW05D002 C5GW05S002 C5GW06S002 CAQW2456Q001 ND132GW03S002 ND132GW04S002 ND132GW05S002	16-07-1587-2 16-07-1587-3 16-07-1587-4 16-07-1587-5 16-07-1587-6 16-07-1587-7 16-07-1587-8	07/22/16 09:40 07/22/16 09:40 07/22/16 09:50 07/22/16 07:00 07/22/16 10:00 07/22/16 11:00	31 31 31 9 31 31 31	Aqueous Aqueous Aqueous Aqueous Aqueous Aqueous Aqueous Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1587				Page 1 of 1
Method	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 9	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	682	GC 46	1
EPA 8015B (M)	EPA 5030C	715	GC 24	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	929	GC 52	2
RSK-175M	N/A	1074	GC 14	2
RSK-175M	N/A	1074	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	650	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 8	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1587 Page 1 of 1

	-
Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.

concentration by a factor of four or greater.

Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

16-07-1587

Chain of Custody Record	ord COC Number: CALS07221601	•	The Samuelle	7/22/2(7/22/2016 2:26:37 PM	37 PA	ľ	Page 1 of 16	of 16		-	-	-		-
Project Name SSFL Task Order 582 Project: 30 Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB ny Hilliard ASAN 570,5084				SM			CMC			SW82				
2	toon-0.50 (055)									5	601				
Turnaround Time 10 Days			A2	RSK						SW8	BSI		SW		
PO Number 100067101891			376.2 23201 504.2	25400 (1751 (1751	-Fe-l	6020 M-L	002	015E	15-I	2601	M-LI	19050	19060		
Sample ID	Sample Date/Time Type Matrix # Co	# Containers Preserv	B 1	M						3					
) C5GW04S002	22-Jul-16 9:30 N Water														
Alkalinity	Field Filtered:	1 4'C	 S 												
C02	Field Filtered:	2 4'C		S											
1,4-Dioxane LL	Field Filtered:	3 HCL pH<24C									<u>></u>				
Methane, ethane, ethene	Field Filtered:	3 HCL pH<2 4C		<u>□</u>								H			
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	1 HN03, 4'C						<u> </u>				H			
Mn	Field Filtered:	1 HN03, 4'C					<u>></u>	Ш							
Ferrous Iron	Field Filtered:	1 4'C			<u>></u>										
SO4, CI, NO3, F	Field Filtered:	1 4'C	 												
Conductivity	Field Filtered:	1 4'C										>			
Sulfide	Field Filtered:	1 NaOH, ZnAc, 4'C	3					П							
100	Field Filtered:	1 H2SO4, pH<2, 4'C											<u>></u>		П
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	1 HN03, 4'C				5									
NDMA - LL	Field Filtered:	2 4'C				S							님	뷤	$\overline{\Box}$
MS = Matrix Spike SD = Matrix	= Matrix Spike Duplicate Signatures Date/Time	Shipping Details)etails					S	Special Instructions:	Inst	ructi	ions:			
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2															



Chain of Custody Record	COC Number: CALS07221601	(本事者為監督作信息。 7/22/2016 2:26:38 PM	Page 2 of 16
Project Name SSFL Location Santa Susana Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS		
Sample Manager Jamie Beckett	(530) 570-5084	SW1	S
Turnaround Time 10 Days		E3	
PO Number 100067101891		M-L Fe-	260 15- 015
Sample ID Sample I	Sample Date/Time Type Matrix # Containers Preserv	L D C C M M S 5 2 2 D B 1 0 0	O L B P B
TDS	Field Filtered: ☐ 1 4'C		
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: ☐ 2 4'C		
VOCs full list	Field Filtered: ☐ 3 HCL pH<2 4C	2 4C	
EDB/DBCP	Field Filtered: 3 Na2S203, 4'C	,4°C	
Report Carbon Ranges	Field Filtered: ☐ 3 HCL pH<2 4C	2 4C	
	Total Containers: 31		
Control of the Contro	7/2/XX		

MS = Matrix Spike SD = Matrix Spike Duplicate			
Signatures Date/Time	Shipping Details		Special Instructions:
Approved by T	Method of Shipment: FedEx	ATTN:	CH582 PO: 10006710189
		Sample Custody	CT614 PO 100067 10584
Received by Activity 18	The state of the s	and	Report Copy to
lby My		Michele Castro	Jon Freed
Definited &	Lab Phone: (949) 870-8766		(208) 660-4929





Chain of Custody Record	rd COC Number: CALS07221601	Carabatille 7/22/2	7/22/2016 2:26:38 PM Page	e 3 of 16
SSFL 582 oer 65431 ger Jeren iger Jamie	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard 1 (530) 570-5084 Days	RSK RS E3 A2 5	SW6010B/ SW1625 SM3500-	SW SW8260BSI SW8 SW80
PO Number 100067101891 Sample ID	Sample Date/Time Type Matrix # Containers Preserv	175M K175 76.2 320B 04.1	010F 6020 M-LL	260B
C5GW05D002	22-Jul-16 9:40 N Water			
Alkalinity	Field Filtered: 1 4'C			
C02	Field Filtered: 2 4'C			
1,4-Dioxane LL	Field Filtered: ☐ 3 HCL pH<2 4C	24c		
Methane, ethane, ethene	Field Filtered: 3 HCL pH<2 4C	2 4C		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 1 HN03, 4'C	4'C		
Mn	Field Filtered: 1 HN03, 4'C	4'C		
Ferrous Iron	Field Filtered: 1 4'C			
SO4, CI, NO3, F	Field Filtered: 1 4'C			
Conductivity	Field Filtered: 1 4'C			S
Sulfide	Field Filtered: 1 NaOH, ZnAc, 4'C	Ac, 4'C		
T0C	Field Filtered:☐ 1 H2SO4, pH<2, 4'C	<2, 4'C		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: ☐ 1 HNO3, 4'C	4'C	S	
NDMA - LL	Field Filtered: ☐ 2 4'C			
MS = Matrix Spike SD = Matrix S Approved by Sampled by Relinquished by Received by Relinquished by Relinquished by Received by Approximately Received by R	SD = Matrix Spike Duplicate Signatures Date/Time Shipping I Sh	Shipping Details nipment: FedEx 1 no CalScience (949) 870-8766	ATTN: Sample Custody and Michele Castro	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed (208) 660-4929





Chain of Custody Record COC Numb	Jumber: CALS07221601		電子電影響響音信息。 7/22/2016 2:26:38 PM	7/22,	2016	2:26:38	Mc	Page 4 of 16	of 16				
Project Name SSFL Location Santa 8 Task Order 582 Project: 3Q2016 SA/PCP & Al0 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891 Sample ID	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS (530) 570-5084 ample Date/Time Tyne Matrix # Containers	lainers Preserv	E376.2 A2320B 504.1 300.0	RSK175M RSK175	SM2540C	SW1625M-LL SM3500-Fe-D	SW6010F SW6010B/6020	SW8015B SW6010F/6020	SW8015-P	SW8260BSIM-LL SW8260B	SW9050	SW9060	
					2								
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C											
VOCs full list	Field Filtered:	3 HCL pH<2 4C								3			
EDB/DBCP	Field Filtered:	3 Na2S203, 4'C											
Report Carbon Ranges	Field Filtered:	3 HCL pH<2 4C							2				
	Total Containers:	iners: 31											
		The second secon					-						

Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by		Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by Relinquished by	PH 150x	on Ice: yes I no	Sample Custody	
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J M M	700/10/8°	That the Carp Lab Name: CalScience	Michele Castro	Jon Freed
The legit of the	イン・アング	Lab Phone: (949) 870-8766		(208) 660-4929

(KBY)

Chain of Custody Record COC Number: CALS07221601	## ## ##	C. C. C. C. C. C. C. C. C. C. C. C. C. C	7/22/2016 2:26:38 PM	Page 5 of 16			<u> </u>
Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10Days		R E	SW6010B SW162 SM3500 SM		SW8260BS		
PO Number 100067101891 Sample Date/Time Type Matrix # Containers	300.0	SK175M SSK175 376.2 2320B 504.1	5M-LL -Fe-D	015-P 8015B 7/6020	IM-LL 8260B	W9060 W9050	
C5GW05S002 22-Jul-16 9:40 N Water							- 1
Alkalinity Filtered: 1	4'C						
C02 Field Filtered: 2	4'C						
1,4-Dioxane LL Field Filtered: 3	HCL pH<2 4C				<u>S</u>		in l
Methane, ethane, ethene 3	HCL pH<2 4C □	5					
Ba, B, Ca, Mg, K, Na, Sr Field Filtered: ✓	HN03, 4'C			□ □ •			
Mn Field Filtered:	HN03, 4'C						
Field Filtered:	4'C						
SO4, Cl, NO3, F Field Filtered: 1	4'C						
Conductivity Field Filtered: 1	4'C						
Suffide Field Filtered: 1	NaOH, ZnAc, 4'C						
T0C Field Filtered:	H2SO4, pH<2, 4'C						in i
Ba, B, Ca, Mg, K, Na, Sr Field Filtered: ☐ 1	HN03, 4'C						
NDMA - LL Field Filtered: ☐ 2	4'C						
MS = Matrix Spike SD = Matrix Spike Duplicate				ALLAM AMERICAN PROPERTY OF THE	A A A A A A A A A A A A A A A A A A A		
Signatures pate/Time	Shipping Details	S	T V	Special	Special Instructions:	tions:	
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Received by Received by Relinguished by Reling			and Michele Castro		Report Copy to Jon F	py to Jon Freed	
Received by Thurs Cu Alth 1810 Lab Phone:	e: (949) 870-8766				(208) 6	(208) 660-4929	



Chain of Custody Record COC Number	COC Number: CALS07221601				7/22/2016 2:26:38 PM	6:38 PI		Page 6 of 16	of 16				ľ
Location San	ta Susana Field Lab AIG GWS												
Project Number 03-577-35D Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	0-5084				SM3			SW60:	5		SM8261		
Turnaround Time 10 Days PO Number 100067101891			E376. A2320 504.	RSK175	500-Fe- SM2540	10B/602 1625M-I	SW6010	SW8015 10F/602	SW8015-	SW8260	SW905 DBSIM-L	SW906	Market
Sample ID Sample Date/Time	Type Matrix	# Containers Preserv	. 2)B	M			F		P				
TDS	Field Filtered:	1 4'C			 								
Report Carbon Ranges ind. EFH C8-C30 Total	Field Filtered:	2 4'C						<u>></u>					
VOCs full list	Field Filtered:	3 HCL pH<2 4C								<u>5</u>			
EDB/DBCP	Field Filtered:□	3 Na2S203, 4'C									믜		
Report Carbon Ranges	Field Filtered:	3 HCL pH<2 4C							2		밁		
	Total Containers:	ainers: 31											

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	Date/Time Shipping Details		Special Instructions:
Approved By		ATTN:	CH582 PO: 100067101891
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M	7 22/1, 15 October 1800	and	Report Copy to
d by	CalScience CalScience	Michele Castro	Jon Freed
Kingaline En	77 3/6 (8-m Lab Phone: (949) 870-8766		(208) 660-4929
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Chain of Custody Record	ord COC Number:	CALS07221601	301	, printe,	THE SERVICE			إيسا	7/22/	2016	7/22/2016 2:26:39 PM	39 P	2	Page 7	e 7 c	of 16			-	-		ľ
Project Name SSFL Task Order 582 Project: 3C Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard	Santa Susana Field Lab												SW6				SW82			***************************************	
Turnaround Time 10 Days PO Number 100067101891	(20)				300	504	E376	RSK1	RSK17	SM2540	W1625M-I 13500-Fe-	5010B/602	SW6010	010F/602	SW8015	SW8015-	SW8260	60BSIM-I	SW905	SW906		
Sample ID	Sample Date/Time	Type Matrix #C	# Containers	ners Preserv	.0				5M	0C				20	5B	-P	OΒ	LL	50	60		
C5GW06S002	22-Jul-16 9:50	N Water																				
Alkalinity	man and separate the separate that the separate	Field Filtered:	-	4'C			<u> </u>															П
C02	The state of the s	Field Filtered:	7	4'C					3		H											П
1,4-Dioxane LL		Field Filtered:	က	HCL pH<2 4C														3				\Box
Methane, ethane, ethene		Field Filtered:	3	HCL pH<2 4C				2														П
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	-	HN03, 4'C										S								
Mn		Field Filtered:	-	HN03, 4'C									>									П
Ferrous Iron		Field Filtered:	_	4'C							>											
SO4, CI, NO3, F		Field Filtered:	_	4'C	2						H											
Conductivity	The state of the s	Field Filtered:	_	4'C							片								2			
Sulfide		Field Filtered:	-	NaOH, ZnAc, 4'C	U O		<u>></u>				H											
100		Field Filtered:	_	H2SO4, pH<2, 4'C	္င							H								S		
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	_	HN03, 4'C								2										
NDMA - LL	The state of the s	Field Filtered:] 2	4'C								2										
MS = Matrix Spike SD = Matrix S	SD = Matrix Spike Duplicate	Date/Time	To complete	Shipping Details	Detail	, s									Spe	ecial	Insi	Special Instructions:	lions	;;		
Approved by Sampled by	<i>)</i> (4)		Method o	Method of Shipment: On Ice: ves / no	FedEx	×					ATTN: Sample Custody	ATTN:	: ustod	≥	22	582 614	9 Q	CH582 PO: 100067101891 CH614 PO 100067103941)671 671(0189 3394	2 –	
Refinquished by Received by Received by Received by	the Hart	Airbill No:	Airbill No:	0 0	e 8766						Mich	and Michele Castro	Sastro		Re l	port.	Cop (20,	Report Copy to Jon Freed (208) 660-4929	reec 30-49	929		



Chain of Custody Record COC Number:	CALS07221601		77842222		7/22/	20162	7/22/2016 2:26:39 PM	PM	Page	Page 8 of 16	9				
Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB	sana Field Lab GWS							***************************************							
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084	5084					SM3	SW	SW60	SW60			SW826			×
Turnaround Time 10 Days PO Number 100067101891			504 300	E376	RSK17	500-Fe SM254	1625M-	SW601	10F/60	SW8015 SW801	SW826	OBSIM-	SW90	SW90	
Sample ID Sample Date/Time T	Type Matrix # Containers	ners Preserv	.1	. 2			LL		20			LL		60	
TDS	Field Filtered:	4'C				S									
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C								S				片	
VOCs full list	Field Filtered: 3	HCL pH<2 4C									2				
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C	<u> </u>												
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C								<u> </u>			H		
	Total Containers	ers: 31													
CAQW2456Q001 22-Jul-16 7:00	N Water														
1,4-Dioxane LL	Field Filtered: 3	HCL pH<2 4C										3			
VOCs full list	Field Filtered: 3	HCL pH<2 4C									3			片	
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C								<u>S</u>				П	
	Total Containers:	ers: 9	AMERICAN AND PROPERTY.												

gnatures	Date/Time	Shipping Details		Special Instructions:
	122/	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
	Restant	On Ice: yes I no	Sample Custody	
1 25	7/10/11 (File	S Airbill No:	and	Report Copy to
1	12016 184	2/16 (8 out ab Name: CalScience	Michele Castro	Jon Freed
100°	かんりん からん	DLab Phone: (949) 870-8766		(208) 660-4929

MS = Matrix Spike SD = Matrix

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Chain of Custody Record	ord COC Number: CALS07221601	4	CHARTHE 1/2	7/22/2016 2:26:39 PM	26:39 PM	Page (9 of 16					
Project Name SSFL Task Order 582 Project: 30 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard 1530) 570-5084 Days		R E A		SW6010B	SW6010F			SW8260BS	S		one make Anthonor and to T to T to T to T to T to T to T to
PO Number 100067101891 Sample ID	Sample Date/Time Type Matrix # Containers	Preserv	28K175M 28K175 2376.2 22320B 504.1 300.0	12540C	76010F 3/6020 25M-LL		015-P 8015B	18260B	W9050	W9060		
ND132GW03S002	22-Jul-16 10:00 N Water											
Alkalinity	Field Filtered: ☐ 1	4'C										П
C02	Field Filtered: ☐ 2	4'C										П
1,4-Dioxane LL	Field Filtered: ☐ 3 H	HCL pH<2 4C							2			
Methane, ethane, ethene	Field Filtered: ☐ 3 H	HCL pH<2 4C										
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:✓ 1	HNO3, 4'C				2						
Mn	Field Filtered:✓ 1	HNO3, 4'C			S							
Ferrous Iron	Field Filtered:	4'C		S								
SO4, CI, NO3, F	Field Filtered: ☐ 1	4'C										
Conductivity	Field Filtered: 1	4'C							<u> </u>			
Sulfide	Field Filtered: ☐ 1 Na	NaOH, ZnAc, 4'C										
T0C	Field Filtered:	H2SO4, pH<2, 4'C								2		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 1	HNO3, 4'C			3							
NDMA - LL	Field Filtered: ☐ 2	4'C			S							
MS = Matrix Spike SD = Matrix §	SD = Matrix Spike Duplicate											
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Relinquished M		!		Š	and and		Report Copy to	Copy	\$			
Relinquished by Of (TUL)	Trylle (800 Lab Phone:	CalScience (949) 870-8766	99	Σ	Michele Castro			Jc (208	Jon Freed (208) 660-4929	t929		



Chain of Custody Record COC Number	COC Number: CALS07221601	_				- إيس	7/22	7/22/2016 2:26:39 PM	2:26	39 P		Page 10 of 16	9	91 16	-	-	_	-
Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377.82.LB	ta Susana Field Lab AIG GWS																	
(530)	570-5084											SW601			SW8260			100° 410° 720° 71° 71° 71° 71° 71° 71° 71° 71° 71° 71
Turnaround Time 10 Days PO Number 100067101891			300	504 300	E376 A232	RSK1	RSK17	SM254	625M-:	LOB/60:	SW601	OF/60	SW801	W8015-	BSIM-1 SW8260	SW905	SW906	
Sample ID Sample Date/Time	Type Matrix # Containers	ntainers Preserv					5M	0C			OF	20	5B					
, TDS	Field Filtered:	1 4'C						<u> </u>						님				
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:	2 4'C											<u> </u>					
VOCs full list	Field Filtered:	3 HCL pH<2 4C	4C												S			
EDB/DBCP	Field Filtered:	3 Na2S203, 4'C	4'C	<u>></u>					뒴	믬				ᆔ				
Report Carbon Ranges	Field Filtered:	3 HCL pH<24C	4C						뷞					<u>></u>		井		
	Total Containers	ainers: 31																
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Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by		Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	11/16/1000	On Ice: yes / no	Sample Custody	100000000000000000000000000000000000000
Relinquished by	1 190 li 1500	Airbill No:	and	d yaco
Received by Commission by	100/20	TOUR IN Lab Name: CalScience	Michele Castro	Jon Freed
Diffurd on	Dr/16 18:00	132/16 1800 Lab Phone: (949) 870-8766		(208) 660-4929
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COC Number: CALS07221601

Chain of Custody Record

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Project Name SSFL Task Order 582 Project: 30 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891 Sample ID	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB by Hilliard (530) 570-5084 Days 11891 Sample Date/Time Type Matrix	Field Lab	# Containers	ners Preserv	300.0	A2320B 504.1	E376.2	RSK175	SM2540C RSK175M	SM3500-Fe-D	SW1625M-LL	SW6010B/6020	SW6010F	SW6010F/6020	SW8015-P SW8015B	SW8260B	SW8260BSIM-LL	SW9050	SW9060		
ND132GW04S002	22-Jul-16 10:30	N Water														,					
Alkalinity		Field Filtered:	_	4'C		S								片							
C02		Field Filtered:	2	4'C					3												
1,4-Dioxane LL		Field Filtered:	က	HCL pH<2 4C													>				
Methane, ethane, ethene		Field Filtered:	3	HCL pH<2 4C				<u>S</u>													
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	_	HNO3, 4'C										S							
Mn		Field Filtered:	-	HN03, 4'C									<u>></u>								
Ferrous Iron		Field Filtered:	-	4'C						<u>></u>					Ш						
SO4, CI, NO3, F		Field Filtered:	_	4°C	2																
Conductivity		Field Filtered:	-	4°C											П			>			
Sulfide		Field Filtered:	1	NaOH, ZnAc, 4'C			2														
T0C		Field Filtered:	-	H2SO4, pH<2, 4'C		H													5		
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	_	HN03, 4'C								3									
NDMA - LL		Field Filtered:	2	4'C		∦					2										
MS = Matrix Spike SD = Matrix Sig Approved by Sampled by Relinquished by Received by Refinquished by Received by Approved by Received by Matrix Sig Approved By	SD = Matrix Spike Duplicate Signatures D MATTER TEA TEA TO DATE D DATE D D D D D D D D D D D D D D D D D D D	Date/Time Method of SI Method of SI Method of SI On Ice: yes Airbill No: CZ (S. Co Lab Name: UN (E. (P. op Lab Phone:	On Ice: ye On Ice: ye Airbill No: Chab Name:	Shipping Details Method of Shipment: FedE> On Ice: yes / no Airbill No: CalScience Lab Name: CalScience	Details FedEx 766					, si si si si si si si si si si si si si	ATTN: Sample Custody and Michele Castro	ATTN: pple Cus and hele Ca	tody	8 00 E	speci 3H58 3H61 3H61	Special Instructions: CH582 PO: 100067101891 CH614 PO 100067103941 Report Copy to Jon Freed Jon Freed (208) 660-4929	nstructions: O: 1000671018 O 1000671039 :opy to Jon Freed Jon Freed (208) 660-4929	structions: : 10006710 10006710 py to Jon Freed	s: 10189 0394 d	2.2	





Project Name SSFL	Chain of Custody Record CC	COC Number: CALS07221601			22/2016	7/22/2016 2:26:39 PM		Page 12 of 16	ıf 16			l.
Sw8260BSIM-LL	302	າ Santa Susana Field Lab ວດP & AIG GWS										
Sw9050		(530) 570-5084				SW	SW60			SW826		
Sample Date/Time Type Matrix # Containers Preserv Organia Field Filtered: 1 40 1 <	Turnaround Time 10 Days PO Number 100067101891		A232	RSK1	SM254	1625M-		SW801				CMOU
Field Filtered: 1 4°C 0		Type Matrix # Containers	0.0B	.75	0C	·LL		.5B				CO
Field Filtered: 2 4°C	TDS	-			<u> </u>							ļ
t Field Filtered: 3 HCL pH<2 4C	Report Carbon Ranges incl. EFH C8-C30 Total	2	1					2				
on Ranges Field Filtered: 3 Na2S203, 4°C Image: Image:	VOCs full list	3	oH<2 4C						<u>></u>		Ц	
Field Filtered: 3 HCL pH<24C	EDB/DBCP	e									빌	
	Report Carbon Ranges	3	0H<2 4C									
		Total Containers:	31									

Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	177	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Mercar	Mercest On Ice: yes / no	Sample Custody	CH614 PO 100067103941
I DA MARINE	7	Airbill No:	pue	
Received by	7	77/16 10 cos 77/16 10 vy Lab Name: CalScience	Strain Colonial	Report Copy to
Acimiquising by	100 0 100 L	% ab Phone: (949) 870-8766	WICHER CASE	(208) 660-4929



Chain of Custody Record	COC Number: CALS07221601	EFFERENCE 7/22/20	7/22/2016 2:26:39 PM Page	je 13 of 16
Project Name SSFL Local Task Order 582 Project: 3Q2016 S Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB 1y Hilliard (530) 570-5084		SW60 SW	
Turnaround Time 10 Days PO Number 100067101891		RSK175 RSK175 E376. A2320 504.	10F/602 SW6010 10B/602 1625M-L 500-Fe-	SW906 SW905 OBSIM-L SW8260 SW8015- SW8015
Sample ID Sampl	Sample Date/Time Type Matrix # Containers Pre	5M 2 2 DB 1	F:0	0 L B
ND132GW05S002 22-Jul-16	II-16 11:00 N Water			The state of the s
Alkalinity	Field Filtered: ☐ 1 4'C			
CO2	Field Filtered: 2 4'C			
1,4-Dioxane LL	Field Filtered: 3 HCL pH<24C	<24C		
Methane, ethane, ethene	Field Filtered: ☐ 3 HCL pH<24C	<24C		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 7 1 HN03, 4'C	,4'c		
Mn	Field Filtered: 1 HNO3, 4'C	,4'C	S	
Ferrous Iron	Field Filtered: 1 4'C			
SO4, Cl, NO3, F	Field Filtered: 1 4'C			
Conductivity	Field Filtered: 1 4'C			
Sulfide	Field Filtered: ☐ 1 NaOH, ZnAc, 4'C	1Ac, 4'C		
100	Field Filtered:☐ 1 H2SO4, pH<2, 4'C	H<2, 4'C		
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: ☐ 1 HNO3, 4'C	, 4'C		
NDMA - LL	Field Filtered: ☐ 2 4'C			
MS = Matrix Spike SD = Matrix Spike Duplicate	Duplicate		\(\text{\$\texitt{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{\$\text{	
Bignatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Method of Shipment:	int: FedEx	ATTN:	CH582 PO: 100067101891 CH614 PO 100067103941
Sampled by Bolinguished by	# /562 On Ice: yes / no	•	Sample Custody	
Received by	Airbill No:	S. Cianza	and	Report Copy to
Received by Manual &		(949) 870-8766	Michele Castro	Jon Freed (208) 660-4929





Chain of Custody Record COC Num	COC Number: CALS07221601		(7/7	2/201	3 2:26:	40 PM		Page 14 of 16	of 16		ľ		
Location ct: 3Q2016 SA/P _B ard	Santa Susana Field Lab CP & AIG GWS (530) 570-5084													
Turnaround Time 10 Days PO Number 100067101891 Sample ID Sample Date/Time	Type Matrix	#Containers Preserv	E376.2 A2320B 504.1 300.0	RSK175M RSK175	SM2540C	625M-LL 00-Fe-D	0B/6020	0F/6020 SW6010F	SW8015B	SW8260B W8015-P	BSIM-LL	SW9050	SW9060	
TDS	Field Filtered:	1 4'C			>									
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered:□	2 4'C							3					
VOCs full list	Field Filtered:	3 HCL pH<24C												
EDB/DBCP	Field Filtered:	3 Na2S203, 4'C								님			믦	
Report Carbon Ranges	Field Filtered:	3 HCL pH<2 4C								<u> </u>				
	Total Containers:	iners: 31												
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	Special Instructions:	ATTN: CH582 PO: 100067101891	CH614 PO 100067103941	dampie Custody	and Report Copy to	Michele Castro Jon Freed	(208) 660-4929	
THE THE PARTY OF T	Shipping Details	Method of Shipment: FedEx		-	Airbill No:		(Lab Phone: (949) 870-8766	
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Chain of Custody Record	rd COC Number:	CALS07221601	5	4			7/22	7/22/2016 2:26:40 PM	2:26:	40 PN		Page 15	5 of 16	16					
Project Name SSFL Task Order 582 Project: 3Q Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB ny Hilliard (530) 570-5084	sana Field Lab GWS 5084										SW60:			SW8260				
Turnaround Time 10 Days PO Number 100067101891					A2320 504. 300.	E376.	RSK175 RSK17	SM2540	1625M-L 500-Fe-	10B/602	SW6010	SW8015 1 10F/602	SW8015-	SW8260	OBSIM-L	SW905	SW906	***************************************	The state of the s
Sample ID	Sample Date/Time	Type Matrix #Co	# Containers	ers Preserv	1	2		C						В	ıL	0	0		
ND137AGW01S002	22-Jul-16 10:00	N Water																	
Alkalinity		Field Filtered:	-	4'C					П										
C02		Field Filtered:	7	4'C			<u> </u>												П
1,4-Dioxane LL		Field Filtered:	8	HCL pH<2 4C											[2]			П	П
Methane, ethane, ethene		Field Filtered:	က	HCL pH<2 4C			S												
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	1	HN03, 4'C								>					H		П
Mn	i delegación de la constante d	Field Filtered:	-	HN03, 4'C							<u>S</u>								П
Ferrous Iron		Field Filtered:	-	4.C					S								H		
SO4, CI, NO3, F	ANALYSIS OF PROPERTY OF PROPER	Field Filtered:	-	4°C	<u> </u>														П
Conductivity		Field Filtered:	1	4'C									片			2			
Sulfide	ADALAMANANANANANANAN PRINTERIN TITTITTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	Field Filtered:	_	NaOH, ZnAc, 4'C															П
100		Field Filtered:	-	H2SO4, pH<2, 4'C													2		
Ba, B, Ca, Mg, K, Na, Sr		Field Filtered:	-	HN03, 4'C					H	<u>\</u>									П
NDMA - LL		Field Filtered:□	2	4'C					<u>></u>			片							
MS = Matrix Spike SD = Matrix S	SD = Matrix Spike Duplicate																		
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Received by ONUNC	19 Hz	16 (8:00 Lab Phone:	Phone	e: (949) 870-8766	992					Michele Castro	onsi			(20	Jon Freed (208) 660-4929	reed 30-49	129		
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Chain of Custody Record	COC Number: CALS07221601	4	(**)	7/22/20	16 2:26:	40 PM	Page	Page 16 of 16			ľ
Project Name SSFL Location Santa Su Task Order 582 Project: 3Q2016 SA/PCP & AIG Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-Turnaround Time 10 Days PO Number 100067101891 Sample ID Sample ID	Location Santa Susana Field Lab 2016 SA/PCP & AIG GWS (530) 570-5084 Sample Date/Time Type Matrix # Containers	s Preserv	E376.2 A2320B 504.1 300.0	SM2540C RSK175M RSK175	SW1625M-LL SM3500-Fe-D	SW6010F SW6010B/6020	SW6010F/6020	SW8015-P SW8015B	SW8260BSIM-LL SW8260B	SW9060 SW9050	
TDS	Field Filtered: 1	4'C		S							
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C						 			
VOCs full list	Field Filtered: 3	HCL pH<2 4C									
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C									
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C						2			
	Total Containers:	31		7577-0720						some Control	

MS = Matrix Spike SD = Matrix Spike Duplicate	9			
Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by Approved by	12	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by Relinquished by	10/10	On Ice: yes / no	Sample Custody	
24 Trail	Thathe 180	TTTT OAIT IN OS.	and	Report Copy to
by W	1/2/16 (8:0	Jab Name: CalScience	Michele Castro	Jon Freed
Received by Onthrung Lan	777/16 18:00	Lab Phone: (949) 870-8766		(208) 660-4929
	 			

WORK ORDER NUMBER: 16-07- 234 00138

SAMPLE RECEIPT CHECKLIST COOLER 1 OF 4

CLIENT: CHZM DAT	TE: U//	<u> 소스</u>	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3. 4. °C (w/ CF): 2.4. °C; E Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter		□ Sampl d by: <u>&</u>	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		d by: <u>bł</u> d by: <u>/0</u>	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes 🔟	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			_ e
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace ☑ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500)	. 🗆	Þ	
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation			
CONTAINER TYPE: Aqueous: □VOA □VOAh □VOAna₂ □100PJ □100PJna₂ □125AGB □125AGBh □125	AGBp 500A	AGJs □ ag ed by: 500	

WORK ORDER NUMBER: 16-07-135-00-138

SAMPLE RECEIPT CHECKLIST

COOLER 2 OF 4

DATE: 07 / 22/2016

LIENT: CHZM DAT	E: 07 /	<u>22/2</u>	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3. °C (w/ CF): 2. °C; E Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: Air Filter	Blank E		
CUSTODY SEAL: Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked Checked	by: <u> ઇ^ફ્રે</u> by: <u> 0</u>	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete □ Sampling date □ Sampling time □ Matrix □ Number of containers	Z Z	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			a
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation			d
CONTAINER TYPE: Aqueous: DOA DOAN DOANA D	GBp 2 1 J 500A 0	25PB GJ s	
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na}_2 = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Labele $\mathbf{s} = \text{H}_2\text{SO}_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(\text{CH}_3\text{CO}_2)_2 + \text{NaOH}$	d/Checke Reviewe	d by: <u> {\bar{U}}</u>	<u>53</u>

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST COOLER 3 OF 4

CLIENT: CHZM DAT	ΓE: 07 / <u>:</u>	<u> </u>	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7 °C (w/ CF): 3.7 °C; E Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	Blank C		
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	Checked Checked		
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete □ Sampling date □ Sampling time □ Matrix □ Number of containers	Yes 🗹	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested			
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses		...	
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)		<u>a</u>	
Tedlar™ bag(s) free of condensation CONTAINER TYPE: Aqueous: ☐ VOA ☐ VOAh ☐ VOAna2 ☐ 100PJ ☐ 100PJna2 ☐ 125AGB ☐ 125AGBh ☐ 125A ☐ 125PBznna ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 250PB ☐ 250PBn ☐ 500AGB ☐ 500AGB ☐ 500PB ☐ 1AGB ☐ 1AGBna2 ☐ 1AGBs ☐ 1PB ☐ 1PBna ☐ 250PBn ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	er: GBp	GJ s 	
Container: $A = Amber$, $B = Bottle$, $C = Clear$, $E = Envelope$, $G = Glass$, $J = Jar$, $P = Plastic$, and $Z = Ziploc/Re$ Preservative: $b = buffered$, $f = filtered$, $h = HCl$, $n = HNO_3$, $na = NaOH$, $na_2 = Na_2S_2O_3$, $p = H_3PO_4$, Labele $s = H_2SO_4$, $u = ultra-pure$, $znna = Zn(CH_3CO_2)_2 + NaOH$	sealable Ba	g d by: <u>/</u> [<u>153</u>

WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST COOLER 4 OF 4

CLIENT: CHZM DAT	E: U/ / <u>s</u>	<u> </u>	J16
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3 ⋅ 6 °C (w/ CF): 2 ⋅ 6 °C; □ Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter] Sample by: <mark>ੴ</mark>	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A		by: <u>ช^{ูเ}ชเ</u> by: <u>105</u>	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes		N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished time Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace		ď	
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation			
CONTAINER TYPE: Aqueous: VOA VOAh VOAna2 100PJ 100PJna2 125AGB 125AGBh 125AGB 125PBznna 250AGB 250CGB 250CGBs 250PBn 500AGB 500AGJ 500PB 1AGB 1AGBna2 1AGBs 1PB 1PBna 250PBn	GBp 11: 500A(500A(60) 60) 60)	GJs _	<u></u>

** Record the total number of containers (i.e., vials or bottles) for the affected sample.

WORK ORDER NUMBER: 16-07- 1587

SAMPLE ANOMALY REPORT

DATE: 07 / 22 / 2016

SAMPLES, CONTAINERS, AND LABELS: Sample(s) NOT RECEIVED but listed on COC Sample(s) received but NOT LISTED on COC Holding time expired (list client or ECI sample ID and analysis) Insufficient sample amount for requested analysis (list analysis) Improper container(s) used (list analysis) Improper preservative used (list analysis) No preservative noted on COC or label (list analysis and notify lab) Sample container(s) not labeled Client sample label(s) illegible (list container type and analysis) Client sample label(s) do not match COC (comment) Project information Client sample ID Sampling date and/or time Number of container(s)	Comments (-3) collection time Per 10 9:50	îbel
□ Sample(s) received but NOT LISTED on COC □ Holding time expired (list client or ECI sample ID and analysis) □ Insufficient sample amount for requested analysis (list analysis) □ Improper container(s) used (list analysis) □ Improper preservative used (list analysis) □ No preservative noted on COC or label (list analysis and notify lab) □ Sample container(s) not labeled □ Client sample label(s) illegible (list container type and analysis) □ Client sample label(s) do not match COC (comment) □ Project information □ Client sample ID □ Sampling date and/or time	(3) collection time Per 10 9:50	ibel
 ☐ Holding time expired (list client or ECI sample ID and analysis) ☐ Insufficient sample amount for requested analysis (list analysis) ☐ Improper container(s) used (list analysis) ☐ Improper preservative used (list analysis) ☐ No preservative noted on COC or label (list analysis and notify lab) ☐ Sample container(s) not labeled ☐ Client sample label(s) illegible (list container type and analysis) ☐ Client sample label(s) do not match COC (comment) ☐ Project information ☐ Client sample ID ☐ Sampling date and/or time 	(-3) collection time Per 19 9:50	îbel
 ☐ Insufficient sample amount for requested analysis (list analysis) ☐ Improper container(s) used (list analysis) ☐ Improper preservative used (list analysis) ☐ No preservative noted on COC or label (list analysis and notify lab) ☐ Sample container(s) not labeled ☐ Client sample label(s) illegible (list container type and analysis) ☐ Client sample label(s) do not match COC (comment) ☐ Project information ☐ Client sample ID ☐ Sampling date and/or time 	(-3) collection time Per 10 9:50	îbel
 Improper container(s) used (list analysis) Improper preservative used (list analysis) No preservative noted on COC or label (list analysis and notify lab) Sample container(s) not labeled Client sample label(s) illegible (list container type and analysis) Client sample label(s) do not match COC (comment) Project information Client sample ID Sampling date and/or time 	(-3) collection time Per 19 9:50	îbel
□ Improper preservative used (list analysis) □ No preservative noted on COC or label (list analysis and notify lab) □ Sample container(s) not labeled □ Client sample label(s) illegible (list container type and analysis) □ Client sample label(s) do not match COC (comment) □ Project information □ Client sample ID □ Sampling date and/or time	(-3) collection time Per 10 9:50	bel
 □ No preservative noted on COC or label (list analysis and notify lab) □ Sample container(s) not labeled □ Client sample label(s) illegible (list container type and analysis) □ Client sample label(s) do not match COC (comment) □ Project information □ Client sample ID □ Sampling date and/or time 	(-3) collection time Per 10 9:50	bel
□ Sample container(s) not labeled □ Client sample label(s) illegible (list container type and analysis) □ Client sample label(s) do not match COC (comment) □ Project information □ Client sample ID □ Sampling date and/or time	(-3) collection time Per 10 9:50	?bel
□ Sample container(s) not labeled □ Client sample label(s) illegible (list container type and analysis) □ Client sample label(s) do not match COC (comment) □ Project information □ Client sample ID □ Sampling date and/or time	9:50	
☐ Client sample label(s) do not match COC (comment) ☐ Project information ☐ Client sample ID ☐ Sampling date and/or time		
☐ Client sample label(s) do not match COC (comment) ☐ Project information ☐ Client sample ID ☐ Sampling date and/or time		
☐ Client sample ID ☐ Sampling date and/or time		
☐ Client sample ID ☐ Sampling date and/or time		
☑ Sampling date and/or time		
☐ Requested analysis		
☐ Sample container(s) compromised (comment)		
□ Broken		
☐ Water present in sample container		
☐ Air sample container(s) compromised (comment)		
□ Flat		
☐ Very low in volume		
☐ Leaking (not transferred; duplicate bag submitted)		
☐ Leaking (transferred into ECl Tedlar™ bags*)		
☐ Leaking (transferred into client's Tedlar™ bags*)		
* Transferred at client's request.		
MISCELLANEOUS: (Describe)	Comments	
HEADSPACE:		
(Containers with bubble > 6 mm or ½ inch for volatile organic or dissolved gas analysis)	(Containers with bubble for other analysis)	
ECI ECI Total ECI ECI Total Sample ID Container ID Number**	ECI ECI Total Sample ID Container ID Number** Requested Ana	alysis
2 6,H,I 12 8 A,F,6,I 12		
3 E, F, K, L 12 9 A, C, HJJ JKJEP 12		
5 ACF, 6H, I 12 6 H, I 12		
7 0,55,45,512		
G Comments:		

Reviewed by:





WORK ORDER NUMBER: 16-07-1588

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/03/2016 by:

Richard Villafania Project Manager



ResultLink ▶

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: 3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.F

Work Order Number: 16-07-1588

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data	5 5 6 12
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 LCS/LCSD.	13 13 18 19
5	Sample Analysis Summary	25
6	Glossary of Terms and Qualifiers	26
7	Chain-of-Custody/Sample Receipt Form	27



Work Order Narrative

Work Order: 16-07-1588 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/22/16. They were assigned to Work Order 16-07-1588.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

EPA 6020: For 7/29/16 data set - Secondary ICV (M120215A.066) was performed after the ICS analysis, opening ICV (M120215A.055) was performed though target analytes were missing. All batch QC is in control, no further action taken.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-1588

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers:

Collection Date and Time

07/22/16 18:00

7

Attn: Jeremy Hilliard

RD41BGW01S008

Sample Identification Lab Number

16-07-1588-1 07/22/16 14:30 Number of Containers

Matrix

7 Aqueous





Sample Analysis Summary Report

Work Order: 16-07-1588				Page 1 of 1
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1588 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- concentration by a factor of four or greater.

 SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

16-07-1588

Chain of Custody Record	rd COC Number: CALS07221602		7/22/2016 2:28:09 PM Page 1 of 1	
Project Name SSFL Task Order 614 Project: 3Q2 Project Number 666267.14,Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location Santa Susana Field Lab Project: 3Q2016 SAPCP & AIG GWS 57.14.Q3.FW ny Hilliard 5 Beckett (530) 570-5084			
Turnaround Time 10 Days PO Number 100067103941		DBSIM-1 SW8260		
Sample ID	Sample Date/Time Type Matrix # Containers Pre	ЭВ		
RD41BGW01S008	22-Jul-16 14:30 N Water			
1,4-Dioxane LL	Field Filtered: ☐ 3 HCL pH<2 4C	K2 4C		
Ca, Fe, Mg, Mn, K, Na, Sr, Zn	Field Filtered:☑ 1 HNO3, 4'C	3, 4'C		
VOCs full list	Field Filtered: 3 HCL pH<2 4C	K2 4C [V]		
	Total Containers:	7		

The state of the s	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by		1 1/2	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	Man A	Math	On Ice: yes / no	Sample Custody	CH614 PO 10006/103941
Kelinquished by		Sas,	Airbill No:	- C d	
Received by		1 + 1 22 (16 (0 00)	600 Momo: Calenda	<u> </u>	Report Copy to
Relinquished by		18 (S) 5 (B) TH	Lab raile. Caloralica	Michele Castro	Jon Freed
Received by	Darkas Gr	1/2/16 18/0°	72216 18:00 Lab Phone: (949) 870-8766		(208) 660-4929



WORK ORDER NUMBER: 16-07-

SAMPLE RECEIPT CHECKLIST

COOLER OF/
COOLLIX OI

CLIENT: CHZM			DAT	E: U/ /	<u> </u>	2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C Thermometer ID: SC1B (CF: 0.0°C); Tem ☐ Sample(s) outside temperature crite ☐ Sample(s) outside temperature crite ☐ Sample(s) received at ambient temperature: ☐ Air ☐ Filter	perature (w/o CF): 3 · · · ria (PM/APM contacted by ria but received on ice/chi	<u>/</u> °C (w/ CF): <u></u> /:) Iled on same day of s		Blank [
	Present but Not Intact	Not Present	□ N/A	Checked		
Sample(s) ☐ Present and Intact ☐	Present but Not Intact	☑ Not Present	□ N/A	Checked	ا by:	<u> </u>
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) rec COC document(s) received complete □ Sampling date □ Sampling time □		ontainers			No	N/A
☐ No analysis requested ☐ Not relind Sampler's name indicated on COC Sample container label(s) consistent with						
Sample container(s) intact and in good co Proper containers for analyses requested	ndition			B		
Sufficient volume/mass for analyses requessamples received within holding time						
Aqueous samples for certain analyses □ pH □ Residual Chlorine □ Dissol Proper preservation chemical(s) noted on Unpreserved aqueous sample(s) received.	ved Sulfide ☐ Dissolved COC and/or sample cont	Oxygen				
☐ Volatile Organics ☐ Total Metals Container(s) for certain analysis free of he ☐ Volatile Organics ☐ Dissolved Gas	☐ Dissolved Metals eadspace			Ð		
☐ Carbon Dioxide (SM 4500) ☐ Ferror Tedlar™ bag(s) free of condensation						æ
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 125PBznna □ 250AGB □ 250CGB □ □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGB Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCG Air: □ Tedlar™ □ Canister □ Sorbent To Container: A = Amber, B = Bottle, C = Clear, B	☐ 250CGBs ☐ 250PB ☐ 2	250PBn C 500AGB Cores® () □ T Other Matrix (Jar, P = Plastic, and Z	Bh □ 125A0 □ 500AGJ □ □ □ TerraCores® (□ □): □ = Ziploc/Rese	BBp □ 12 □ 500A0 □ □ □ □ □ □ □	25PB GJ s	-
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HC}$ $\mathbf{s} = \text{H}_2\text{SO}_4$, $\mathbf{u} = \text{ultra-pure}$, \mathbf{znna}		$_{2}$ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₂		I/Checked Reviewed		n

WORK ORDER NUMBER: 16-07- / 18

SAMPLE ANOMALY REPORT

DATE: 07 / <u>~</u> 2 / 2016

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☐ Insufficient sample amount for requested analysis (list analysis)	
☐ Improper container(s) used (list analysis)	
☐ Improper preservative used (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)	
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	(1)
☐ Client sample label(s) do not match COC (comment)	labeled as RD41BGWS13007
☐ Project information	7/22/16, @ 1430
_☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	
☐ Air sample container(s) compromised (comment)	
□ Flat	
☐ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
□ Leaking (transferred into ECI Tedlar™ bags*)	
☐ Leaking (transferred into client's Tedlar™ bags*)	
* Transferred at client's request.	
MISCELLANEOUS: (Describe)	Comments
HEADSPACE:	
(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)	(Containers with bubble for other analysis)
ECI ECI Total ECI ECI Total Sample ID Container ID Number**	ECI ECI Total Sample ID Container ID Number** Requested Analysis
Sample 15 Container 15 Number Complete	
Comments:	
Comments.	Reported by: 77%
** Record the total number of containers (i.e., vials or bottles) for the affected sample.	Reported by:
modera the total number of containers (i.e., vials of potties) for the anested sample.	





WORK ORDER NUMBER: 16-07-1633

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	654377.82.LB

Work Order Number: 16-07-1633

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5	Subcontract Narrative	9
6	16-07-1633 EPA 8315 Formaldehyde and 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-1633 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/19/16. They were assigned to Work Order 16-07-1633.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1633

3Q2016 SA/PCP & AIG GWS / 654377.82.LB 4121 Carmichael Rd Project Name:

PO Number: Montgomery, AL 36106-2801

> Date/Time 07/19/16 09:25

Received:

Number of 8

Containers:

Jeremy Hilliard Attn:

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR21GW01S006	16-07-1633-1	07/18/16 12:30	4	Aqueous
HAR23GW01S006	16-07-1633-2	07/18/16 11:00	4	Aqueous





SG

Glossary of Terms and Qualifiers

Work Order: 16-07-1633 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

Χ % Recovery and/or RPD out-of-range. Ζ

Analyte presence was not confirmed by second column or GC/MS analysis.

The sample extract was subjected to Silica Gel treatment prior to analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

hain of Custody Record	rd COC Number: CALS07181604		CH2MHILL	CH2MHILL 7/18/2016 1.57.44 PM Pag	Page 1 of 1
roject Name SSFL Locations SPC SS Project 3Q2016 SA/ roject Number 654377.82.LB roject Manager Jeremy Hilliard ample Manager Jamie Beckett	Location Santa Susana Field Lab 2016 SA/PCP & AIG GWS (530) 570-5084				-07-1633
urnaround Time 10 Days O Number 100067103941			SW8315 SW831		
ample ID	Sample Date/Time Type Matrix # Containers	ntainers Preserv	.5		
AR21GW01S006	18-Jul-16 12:30 N Water				
Formaldehyde	Field Filtered	2 4'C] 		
1,1-РМН, UDМН	Field Filtered	2 4'C			
	Total Containers:	ainers: 4			
IAR23GW01S006	18-Jul-16 11:00 N Water				Annual Control of the
Formaldehyde	Field Filtered	2 4'C			
Hydrazine, MMH, UDMH	Field Filtered	2 4'C			
	Total Containers:	ainers: 4			

	Special instructions:	CH582 PO: 100067101891	CH614 P.O. 100067 103841		Report Copy to	Jon Freed	(208) 660-4929		
	į	ATTA:	Sample Custody		and	Kay Hower			
	Shipping Details	Method of Shipment: FedEx	On Ice. was / no		Airbii No:	Lab Name: Lancaster Laboratories	19-11- / 915 Lab Phone: (318) 618-8889		
icate	Date/Time	0051 31/81/2		a			219/11/11		
SD = Matrix Spike Duplicate	Signatures	Motel Cla	Nowth Ch	Mate Cli			2	1	7
MS = Matrix Spike SD = Matrix Sp		Approved by	Sampled by	Relinguished by	Received by	Delinquiched hy	Received by	i december of	

Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

154252

Group Number(s): 1684345

Page 7 of 17

Client: CH2M Hill

Deliver	y and	Receipt	Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/19/2016 9:25

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes No

Missing Samples:

No

Extra Samples: Discrepancy in Container Qty on COC:

No

Unpacked by Timothy Cubberley (6520) at 11:37 on 07/19/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Thermometer ID Cooler # 32170023

Corrected Temp

Therm, Type

ice Type

Ice Present?

Ice Container

Elevated Temp?

2.1

IR

Wet

Loose

N

WORK ORDER NUMBER: 16-07- 8/633

SAMPLE RECEIPT CHECKLIST

COOLER	 OF	

CLIENT: CH2M HIII	DATE: 07	/	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sample □ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	ling	□ Sam	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/. Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/.		ed by: ed by:	,,,
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested			
Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses			
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of beadspace		0	
Tedlar™ bag(s) free of condensation CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGBh □ □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 50 □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □ □ □ Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	lumber: 125AGBp	125PB \G Js 	
Container: $A = Amber$, $B = Bottle$, $C = Clear$, $E = Envelope$, $G = Glass$, $J = Jar$, $P = Plastic$, and $Z = Ziple$ Preservative: $b = buffered$, $f = filtered$, $h = HCI$, $n = HNO_3$, $na = NaOH$, $na_2 = Na_2S_2O_3$, $p = H_3PO_4$, $L = H_2SO_4$, $u = ultra-pure$, $u = Zn(CH_3CO_2)_2 + NaOH$	oc/Resealable B abeled/Checke Reviewe	ed by:	



Subcontractor Analysis Report

Work Order: 16-07-1633 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1633

Submittal Date: 07/19/2016 Group Number: 1684345 SDG: CSF15 PO Number: 16-07-1633 State of Sample Origin: CA

Client Sample Description HAR21GW01S006 Water HAR23GW01S006 Water Lancaster Labs (LL) # 8480522 8480523

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience
Electronic Copy To Eurofins Calscience

Attn: Terri Chang Attn: Richard Villafania

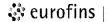
Respectfully Submitted,

Kay Mour

(510) 672-3979

Chain of Custody Reco	ord COC Number	er: CALS07181604		C		2N	MH	iL.	7/18	/201	6 1:8	57:4	4 PN	1	Pag	je 1	of 1			
Project Name SSFL Task Order 582 Project 36 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	Location Santa S Q2016 SA/PCP & AIG (530) 570	GWS																		
Turnaround Time 10 Days PO Number 100067103941 Sample ID	Sample Date/Time	Type Matrix # Cont	tainers	Preserv	SW8315	SW8315A													A STATE OF THE PERSON NAMED OF THE PERSON NAME	
HAR21GW01S006	18-Jul-16 12:30	N Water																		
Formaldehyde		Field Filtered	2	4'C		•														J
1,1-DMH, UDMH		Field Filtered	2	4'C	V															Ī
		Total Contai	ners:	4																
HAR23GW01S006	18-Jul-16 11;00	N Water																		
Formaldehyde		Field Filtered	2	4'C		V														J
Hydrazine, MMH, UDMH		Field Filtered []	2	4'C	V															ĵ
		Total Contai	ners:	4																

MS = Matrix Spike	SD = Matrix Spike Duplicate				
Approved by	Signatures MHH () Li	Date/Time 7/18/16 1590	Shipping Details	ATTN:	Special Instructions:
Sampled by	Mitter Cli		Method of Shipment: FedEx On Ice: yes / no	Sample Custody	CH582 PO: 100067101891 CH614 PO 100067103941
Relinquished by Received by	Travo cea		Airbill No: Lab Name: Lancaster Laboratories	and	Report Copy to
Relinquished by Received by		7-19-16 /925	Lab Phone: (318) 618-8889	Kay Hower	Jon Freed (208) 660-4929



Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log |Bage 16 of 154252 Group Number(s): 1684345

Client: CH2M Hill

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/19/2016 9:25

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes

Missing Samples:

No

Extra Samples:

No

Discrepancy in Container Qty on COC:

No

Unpacked by Timothy Cubberley (6520) at 11:37 on 07/19/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # Thermometer ID

Corrected Temp

Therm. Type

Ice Type

Ice Present?

Ice Container

Elevated Temp?

1

32170023

2.1

IR

Wet

Υ

Loose

Ν

Lancaster Laboratories
Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basisResults printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.







WORK ORDER NUMBER: 16-07-1634

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP	& AIG GWS /	654377.82.LB

Work Order Number: 16-07-1634

1	Work Order Narrative	3
2	Sample Summary	4
3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1634 EPA 8315 Formaldehyde and 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-1634 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/20/16. They were assigned to Work Order 16-07-1634.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1634

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number:

Date/Time 07/20/16 09:30

Received:

Number of 12

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
HAR08GW01S007	16-07-1634-1	07/19/16 09:30	4	Aqueous
HAR11GW01S007	16-07-1634-2	07/19/16 12:00	4	Aqueous
RD49CGW01S006	16-07-1634-3	07/19/16 12:00	4	Aqueous



Glossary of Terms and Qualifiers

Work Order: 16-07-1634 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without furthe clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
00	The country system to use subjected to Cilian Cal transfer and price to engly sign

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

	F-11553		818/851-5		5-8483306-08	33206	-08	İ
Chain of Custody Record		CALS07191	CH2	CH2MHILL	7/19/2016 2:43:00 PM	Page 1 of 1		
Project Name SSFL Task Order 582 Project: 36 Project Number 654377.82.LB Project Manager Jeremy Hilliard	Location Santa Susana Fleid Lab Project: 3Q2016 SAPCP & AIG GWS 77.82.LB ny Hilliard	Susana Fleid Lab GWS				1-20-91	1634	
Sample Manager Janine Decken	(000)	1000						
Turnaround Time 10 Days PO Number 100067103941			SW8	SW83:				
Sample ID	Sample Date/Time	ple Date/Time Type Matrix # Containers		iSA				
HAR08GW01S007	19-Jul-16 9:30	0 N Water						
Formaldehyde	Transcript and the second seco	Field Filtered: 2	4'C					
1,1-РМН, ОВМН		Field Filtered: 2	4.C					
		Total Containers:	4					
HAR11GW01S007	19-Jul-16 12:00	0 N Water						
Formaldehyde		Field Filtered:	4'C					
1,1-DМН, UDМН		Field Filtered: 2	4.c					
		Total Containers:	4				¥ 5	
RD49CGW01S006	19-Jul-16 12:00	0 N Water						
Formaldehyde		Field Filtered: 2	4'C [
1,1-DMH, UDMH		Field Filtered: ☐ 2	4.C					
THE REAL PROPERTY OF THE PROPE	Vision in the latest t	Total Containers:	4					

	Special Instructions: ATTN: CH582 PO: 100067101891	CH614 PO 100067103941 Sample Custody	and Report Copy to	Kay Hower Jon Freed	0781-000 (007)
	Shipping Details Method of Shinment: FedEx		Airbili No:	Lab Name: Lancaster Laboratories	7/3d/6 430 Lab Phone: (310) 010-0000
And And And And And And And And And And	Date/Time 7/(9//6 1500				Madle 430
SD = Matrix Spike Duplicate	Mary Chy		Month (Sea		pr partse
IS = Matrix Solke SD = Matrix Sp	pproved by	ampled by	emiquismed by (aceived by	elinquished by	eceived by

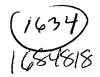
Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

154381

Group Number(s):



Client: CH2MHILL

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/20/2016 9:30

Number of Packages:

2

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

No

Custody Seal Intact:

Yes Yes VOA Vial Headspace ≥ 6mm: Total Trip Blank Qty:

Air Quality Samples Present:

N/A 0

Samples Chilled: Paperwork Enclosed:

Yes

Samples Intact:

Yes

Missing Samples:

No No

Extra Samples: Discrepancy in Container Qty on COC:

No

Unpacked by Joseph Huber (7831) at 10:45 on 07/20/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	<u>lce Type</u>	<u>lce Present?</u>	<u>Ice Container</u>	Elevated Lettis
<u> </u>	32170023	0.2	!R	Wet	Υ	Loose	N
!			IR	Wet	Υ	Loose	, N
2	32170023	0.3					

WORK ORDER NUMBER: 16-07- 8 9 1834

SAMPLE RECEIPT CHECKLIST

COOLER	 OF	

CLIENT: <u>CHaM Hill</u>			DA	ΓE: 07 /		2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not Thermometer ID: SC1B (CF: 0.0°C); Temperature Criteria (Control of Sample(s)) outside temperature Criteria (Control of Sample(s)) outside temperature Criteria (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received at ambient temperature (Control of Sample(s)) received (Control	ature (w/o CF): (PM/APM contacted b but received on ice/ch	°C (w/ CF): y:) illed on same day of		□ Blank □ Checked		
	esent but Not Intact esent but Not Intact	□ Not Present □ Not Present	□ N/A	Checked Checked		
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received COC document(s) received complete	latrix □ Number of co	ontainers	\	Yes	No	N/A
☐ No analysis requested ☐ Not relinquis Sampler's name indicated on COC Sample container label(s) consistent with CO Sample container(s) intact and in good condit	Cion	0,	quished time			_
Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses reg	ed	<u> </u>			_ 	
□ pH □ Residual Chlorine □ Dissolved Proper preservation chemical(s) noted on CO Unpreserved aqueous sample(s) received □ Volatile Organics □ Total Metass □ D	C and/of sample cont for certain analyses	MF			<u> </u>	
Container(s) for certain analysis free of heads ☐ Volatile Organics ☐ Dissolved Gases (☐ Carbon Dioxide (SM 4506) ☐ Ferrous	space (RSK-175) □ Dissolv Iron (SM 3500) □ Hy	ed Oxygen (SM 450 /drogen Sulfide (Ha	00) ch)		_	_
Tedlar™ bag(s) free of condensation						
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 1 □ 125PBznna □ 250AGB □ 250CGB □ 25 □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Air: □ Tedlar™ □ Canister □ Sorbent Tube Container: A = Amber, B = Bottle, C = Clear, E = E	0CGBs	1 125AGB ☐ 125AG 250PBn ☐ 500AGE ☐ ☐ ☐ ☐ nCores® () ☐ Other Matrix (3 □ 500AGJ □ □ TerraCores [®] —): □	GBp	25PB GJs 	
Preservative: b = buffered, f = filtered, h = HCI, n = $\mathbf{s} = H_2SO_4$, u = ultra-pure, znna = Zn	•	$_{2}$ = Na ₂ S ₂ O ₃ , p = H ₃ PC		d/Checked Reviewed		



Subcontractor Analysis Report

Work Order: 16-07-1634 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1634

Submittal Date: 07/20/2016 Group Number: 1684818 SDG: CSF16 PO Number: 16-07-1634 State of Sample Origin: CA

 Client Sample Description
 (LL) #

 HAR08GW01S007 Water
 8483306

 HAR11GW01S007 Water
 8483307

 RD49CGW01S006 Water
 8483308

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience Attn: Terri Chang Electronic Copy To Eurofins Calscience Attn: Richard Villafania

Respectfully Submitted,

Kay Mour

(510) 672-3979

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Chain of Custody Rec			CALS071916		1	H.		ЯН	ILI	_	7/19	/201	6 2:4	3:0	0 PM	1	Page	e 1 c	of 1						
Project Name SSFL Task Order 582 Project: 3 Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	3Q2016 SA/PC																								
Turnaround Time 10 Days					T.	w.S	SW8																		
PO Number 100067103941						SW8315	SW8315A																		
Sample ID	Sample Dat	e/Time	Type Matrix #Co	ntainers	Preserv	-	_													-	_		-	_	-
HAR08GW01S007	19-Jul-16	9:30	N Water					_	_	_		_		_					_	\dashv		=	\dashv		
Formaldehyde			Field Filtered:	2	4'C		V				Ш				Ш						밐		4		
1,1-DMH, UDMH			Field Filtered:	2	4'C	•																			
			Total Con	tainers:	4																		NANCHI COLOR		
HAR11GW01S007	19-Jul-16	12:00	N Water																						
Formaldehyde			Field Filtered:	2	4'C		V																可		
1,1-DMH, UDMH			Field Filtered:	2	4'C	V																			
			Total Con	tainers:	4																				
RD49CGW01S006	19-Jul-16	12:00	N Water																					-	
Formaldehyde			Field Filtered:	2	4'C		V																		
1,1-DMH, UDMH			Field Filtered:	2	4'C	V																			
			Total Con	tainers:	4	1																			
	Spike Duplica gnatures (UM (US (Ur)		On I	nod of Sh		Petai l							Sar		T N :	stody		CH5	582 F	PO: 1	1000	tions 06710 6710	0189		
Received by	Market Control		Airb	ill No:										а	ınd		:	Rep	ort (Сор	y to				

Kay Hower

Jon Freed

(208) 660-4929

Lab Name: Lancaster Laboratories

7/2016 930 Lab Phone: (318) 618-8889

Relinquished by

Received by



Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log IDPage 17 of 51/881 Group Number(s):

Client: CH2MHILL

1684818

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/20/2016 9:30

Number of Packages:

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

Air Quality Samples Present:

N/A

No

Samples Chilled:

Yes

Total Trip Blank Qty:

Paperwork Enclosed:

Yes

0

Samples Intact:

Yes

No

Missing Samples:

Extra Samples:

Νo

Discrepancy in Container Qty on COC:

No

Unpacked by Joseph Huber (7831) at 10:45 on 07/20/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	<u>Ice Container</u>	Elevated Temp?
1	32170023	0.2	IR	Wet	Υ	Loose	N
2	32170023	0.3	IR	Wet	Υ	Loose	, N

Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

less than <

greater than >

parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For ppm aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

parts per billion ppb

Dry weight Results printed under this heading have been adjusted for moisture content. This increases the analyte weight basis concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.







WORK ORDER NUMBER: 16-07-1663

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/04/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW
----------------------	---

Work Order Number: 16-07-1663

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data	5 5 6 18
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 LCS/LCSD.	19 19 25 26
5	Sample Analysis Summary	32
6	Glossary of Terms and Qualifiers	33
7	Chain-of-Custody/Sample Receipt Form	34



Work Order Narrative

Work Order: 16-07-1663 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/25/16. They were assigned to Work Order 16-07-1663.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

EPA 6020: For 7/29/16 data set - Secondary ICV (M120215A.066) was performed after the ICS analysis, opening ICV (M120215A.055) was performed though target analytes were missing. All batch QC is in control, no further action taken.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-1663

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of

Containers:

07/25/16 17:45

13

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2457Q001	16-07-1663-1	07/25/16 07:00	6	Aqueous
RD41AGW01S006	16-07-1663-2	07/25/16 08:45	7	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1663				Page 1 of 1
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1663 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

								-	-
Project Name SSFL Lo Task Order 614 Project 3Q201	Location Santa Susana Field Lab Project 3Q2016 SA/PCP & AIG GWS	ana Field Lab iWS				 ****	(C)	7	
662							9 9 9		2
Project Manager Jeremy Hilliard		700	SW	SW82					,
Sample Manager Jamie Beckett	00-070 (000)	-50004	50:						
Turnaround Time 10 Days			LOF	SW		 			
PO Number 100067103941			/60:	826					
Sample ID Sar	Sample Date/Time T	Type Matrix # Containers Pr	Preserv 02	0B					
7) 100075	25-Jul-16 7:00	N Water							
1,4-Dioxane LL		Field Filtered 3 HCL pH<2 4C	I<2 4C						
VOCs full list	The state of the s	Field Filtered 3 HCL pH<2 4C	<2 4C						
	A CONTRACTOR OF THE PROPERTY O	Total Containers:	မွ		-				
RD41AGW01S006 (2) 25-	25-Jul-16 8:45	N Water							
1,4-Dioxane LL		Field Filtered 3 HCL pH<24C	1<2 4C						
Ca, Fe, Mg, Mn, K, Na, Sr, Zn		Field Filtered 🗸 1 HNO3, 4'C	3, 4'C						
VOCs full list		Field Filtered 3 HCL pH<2 4C	1<2 4C	<u> </u>					
AND THE REAL PROPERTY AND THE PROPERTY A	WAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Total Containers:	7			 			

Signatures Date/Time Shipping Details ATTN: Method of Shipment: FedEx Sample Custody On Ice: yes / no and Alby Arbill No: Aby Arbill No: Aby Arbill No: Alby Arby	MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate				
by Hard Carlo of Shipment: FedEx Anthri: Anthr		Signatures	Date/Time			Special Instructions:
by Michele Castro by Arshill No: and Arshill No: by Arshill 15 ab Name: CalScience Michele Castro Arshill 14 45 Name: (949) 870-8766	Approved by	Mater Can	7/25/16 1500	Method of Shipment:	ATTN:	CH582 PO: 100067101891
by Month Carlot Sample Custody and Arbill No: by Arbill 15 April 14 - 45 April 15	Sampled by	Motella	,			CH614 PO 100067103941
by Azz III 17 Wath Name: CalScience Michele Castro Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Michele Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Calscience Castro Castro Calscience Castro Castr	Relinquished by	Mass Di	6	Oll Ice. yes / IIO	sample custody	
1 by Alamei CalScience Michele Castro Michele Castro Alamei (949) 870-8766	Received by	200	7/25/16 15 c	Airbill No:	and	Report Copy to
7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Relinquished by	- Alle	7 5/11 17 17 17 14 14 14 14 14 14 14 14 14 14 14 14 14	(Seab Name: CalScience	Michele Castro	Jon Freed
	Received by		she illest	Lab Phone: (949) 870-8766		(208) 660-4929

work order number: 16-07- 25,0f 363

SAMPLE RECEIPT CHECKLIST COOLER _ OF _ _

CLIENT: CHZM HILL	DATE: 07 / 2	<u>5</u> 7 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7		
CUSTODY SEAL: Cooler	•	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	_	I 🗆
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested	d d d	
Sufficient volume/mass for analyses requested Samples received within holding time Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen		_ _
Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses □ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace		
□ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation CONTAINER TYPE: (Trip Blank Lot N	lumber:)
Aqueous: □ VOA □ VOAh □ VOAha₂ □ 100PJ □ 100PJna₂ □ 125AGB	00AGJ	
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziple Preservative: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOH, na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₄ , L s = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOH		1: <u>lwz</u> 1: <u>360</u>

work order number: 16-07- 2663

SAMPLE ANOMALY REPORT

DATE: 07 / 25 / 2016

SAMPLES	S, CONTAIN	ERS, AN	D LABELS	3:		Commen	nts		
☐ Sample(s) NOT RECE	IVED but I	isted on CC	C					
☐ Sample(s) received bu	t NOT LIS	TED on CO	C					
☐ Holding	time expired (I	ist client o	r ECI samp	e ID and anal	lysis)				
☐ Insufficie	ent sample am	ount for re	quested an	alysis (list ana	alysis)				
☐ Imprope	r container(s)	used (list a	ınalysis)				,		
☐ Imprope	r preservative	used (list a	analysis)						
☐ No prese	ervative noted	on COC o	r label (list	analysis and r	notify lab)				
☐ Sample	container(s) n	ot labeled							
☐ Client sa	mple label(s)	illegible (lis	st container	type and ana	lysis)				
☐ Client sa	mple label(s)	do not mat	ch COC (co	omment)					
□ Proje	ct information								
☐ Clien	t sample ID						,		
□ Samı	oling date and	or time							
□ Numl	ber of containe	er(s)							
□ Requ	ested analysis	3							
☐ Sample	container(s) co	ompromise	ed (commer	ıt)					
☐ Broke	en								
□ Wate	r present in sa	ample cont	ainer						
☐ Air samp	ole container(s) compron	nised (comr	nent)					
☐ Flat									
□ Very	low in volume					· · · · · · · · · · · · · · · · · · ·			
□ Leak	ing (not transf	erred; dup	licate bag s	ubmitted)					
□ Leak	ing (transferre	d into ECI	Tedlar™ ba	ags*)					
□ Leak	ing (transferre	d into clier	ıt's Tedlar™	⁴ bags*)					
* Transfer	red at client's requ	uest.							
MISCELL	ANEOUS: (escribe)				Commer	nts		
HEADSPA	ACE:							4	
(Containers w	ith bubble > 6 mm	or ¼ inch for	volatile organi	c or dissolved gas	s analysis)	(Containers wi	th bubble for othe	r analysis)	
ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	ECI Sample ID	ECI Container ID	Total Number**	Requested Analysis
1	B-F	1.							
3	<i>V</i> '	6		<u> </u>					
Comments	:								
								F	Reported by: $\frac{100\%}{300}$
** Record the	total number of co	ontainers (i e	vials or hottle	s) for the affected	samole			R	eviewed by: 300





WORK ORDER NUMBER: 16-07-1756

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/09/2016 by:

Richard Villafania Project Manager



ResultLink ▶

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & A	IG GWS / 666267.14.Q3.FW
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Work Order Number: 16-07-1756

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3	Client Sample Data	5 5 6 8
4	Quality Control Sample Data.4.1 MS/MSD.4.2 LCS/LCSD.	9 9 12
5	Sample Analysis Summary	15
6	Glossary of Terms and Qualifiers	16
7	Chain-of-Custody/Sample Receipt Form	17



Work Order Narrative

Work Order: 16-07-1756 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/26/16. They were assigned to Work Order 16-07-1756.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name:

16-07-1756

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers:

18

07/26/16 18:42

Attn: Jeremy Hilliard

HAR19GW01S016

Sample Identification Lab Number

16-07-1756-1

Collection Date and Time

07/26/16 11:00

Number of Containers

Matrix

18 Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1756				Page 1 of 1
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 314.0	N/A	1037	IC 13	1
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	960	HPLC 7	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1756 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
Е	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike

- concentration by a factor of four or greater.
- X % Recovery and/or RPD out-of-range.

SG

Z Analyte presence was not confirmed by second column or GC/MS analysis.

The sample extract was subjected to Silica Gel treatment prior to analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

16-07-1756

CH2NHILL 7/26/2016 1:02:28 PM Page 1 of 2

COC Number: CALS07261602

Chain of Custody Record

roject Name SSFL Project: 3Q2 ask Order 614 Project: 3Q2 roject Number 666267.14.Q3.FW	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 67.14,Q3.FW		
roject Manager Jeremy Hilliard ample Manager Jamie Beckett	(530) 570-5084		
urnaround Time 10 Days		827	SV E:
O Number 100067103941		OCSI	33300 w685 314.
ample ID	Sample Date/Time Type Matrix # Containers	Preserv M	0
AR19GW01S016	26-Jul-16 11:00 N Water		
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered: ☐ 2	4'C	
incl. Pthalates	Field Filtered: 2	4'C	
Perchlorate	Field Filtered: 🗸 1	4'C	
Perchlorate - HOLD	Field Filtered: 🗸 1	4'C	
ALADA PER PER PER PER PER PER PER PER PER PER	Total Containers:	9	
IAR19GW01S016MS	26-Jul-16 11:00 MS Water		
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered: 2	4'C	
inct. Pthalates	Field Filtered: 2	4'C	
Perchlorate	Field Filtered: ✓ 1	4'C	
Perchlorate - HOLD	Field Filtered: 🗾 1	4'C	
	Total Containers:	9	
	1000000 TO TO TO TO TO TO TO TO TO TO TO TO TO		

MS = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	To ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY AND ANALYSIA PROPERTY ANALYSIA PROPERTY ANALYSIA PROPERTY ANALYSIA PROPERTY ANALYSIA PROPERTY ANALYSIA PROPERTY A			***************************************
	M. Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mitted years	0021 71/075/	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	May Uley	, ,	On ice: yes / no	Sample Custody	CH614 PO 100067103941
Relinquished by	Mark Clea	6			
Received by	and the	7/26/16 15th	All Dill NO.	and	Report Copy to
Relinguished by	t.	full. 1840	Lab Name: CalScience	Michele Castro	Jon Freed
Received by	FCT C	072616 1842	72616 1842 Lab Phone: (949) 870-8766		(208) 660-4929
	>				

Chain of Custody Record COC Number: CALS07261602	CH2MHILL	CH2MHILL 7/26/2016 1:02:28 PM Page 2 of 2	1796
Project Name SSFL Location Santa Susana Field Lab Task Order 614 Project: 3Q2016 SA/PCP & AIG GWS Project Number 666267.14.Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084			
Turnaround Time 10 Days PO Number 100067103941	SW8330 SW685 E314. 8270CSI		
Sample ID Sample Date/Time Type Matrix # Containers	0		
HAR19GW01S016SD 26-Jul-16 11:00 SD Water			
Nitrobenzene, 1,3-Dinitrobenzene Field Filtered:	4.C		
ind. Pthalates Filtered: ☐ 2	4'C		
Perchlorate Field Filtered: ✓ 1	4.c		
Perchlorate - HOLD Filtered: ✓ 1	4'C		
Total Containers:	9		

Special Instructions:	CH582 PO: 100067101891		Report Copy to	Jon Freed (208) 660-4929
And April and a second part and ATTN:	Sample Custody	and	Michele Castro	

FedEx

Method of Shipment:

Kab Airbill No:

CalScience (849) 870-8766

Relinquished by Received by

Relinquished by

Received by

Approved by

Sampled by

Shipping Details

Date/Time

MS = Matrix Spike SD = Matrix Spike Duplicate

WORK ORDER NUMBER: 16-07999

SAMPLE RECEIPT CHECKLIST

COOLER	1	OF	X good full
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LIENT: _	CHZMHILL	DATE: 07 / <u>2.6</u> / 201	6

TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 °C; □ Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling	Blank	□ Samp	ble
☐ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: ☐ Air ☐ Filter	Checke	d by: <u>&</u>	04_
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	Checke Checke		,
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples			
COC document(s) received complete	₽		
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time			
Sampler's name indicated on COC	_		
Sample container label(s) consistent with COC	Ø		
Sample container(s) intact and in good condition	Ħ		
Proper containers for analyses requested	Þ		
Sufficient volume/mass for analyses requested			
Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time			
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen			
Proper preservation chemical(s) noted on COC and/or sample container			
Unpreserved aqueous sample(s) received for certain analyses			
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace			ø
□ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500)			
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation			Ø
CONTAINER TYPE: (Trip Blank Lot Number)
Aqueous: DVOA DVOAh DVOAna, D100PJ D100PJna, D125AGB D125AGBh D125A	GBp □ 1	125PB	
☐ 125PBznna ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 250PB ☐ 250PBn ☐ 500AGB ☐ 500AGJ			
□ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna □ □ □ □			
Solid: ☐ 4ozCGJ ☐ 8ozCGJ ☐ 16ozCGJ ☐ Sleeve () ☐ EnCores® () ☐ TerraCores®		□	
Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix (): □]		
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Res			
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na_2} = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Labelet	d/Checke	ed by: <u>/</u>	0/7
s = H ₂ SO ₄ u = ultra-pure znna = Zn(CH ₂ CO ₂) ₂ + NaOH	Reviewe	ed by: 6	81.





WORK ORDER NUMBER: 16-07-1757

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AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

654377.82.LB

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/05/2016 by:

Richard Villafania Project Manager



ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Work Order Number: 16-07-1757

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 RSK-175M Carbon Dioxide (Aqueous). 3.2 RSK-175M Dissolved Gases (Aqueous). 3.3 EPA 300.0 Anions (Aqueous). 3.4 SM 2320B Alkalinity (Aqueous). 3.5 SM 2510 B Specific Conductance (Aqueous). 3.6 SM 2540 C Total Dissolved Solids (Aqueous). 3.7 SM 3500-FeB Ferrous Iron (Aqueous). 3.8 SM 4500 S2 - D Sulfide (Aqueous). 3.9 SM 5310 B Total Organic Carbon (Aqueous). 3.10 EPA 8015B (M) C8-C40 (Aqueous). 3.11 EPA 8015B (M) TPH Gasoline (Aqueous). 3.12 EPA 6020 ICP/MS Metals Scan Total (Aqueous). 3.13 EPA 6020 ICP/MS Metals Scan Filtered (Aqueous). 3.14 EPA 1625C (M) NDMA (Aqueous). 3.15 EPA 504.1 EDB and DBCP (Aqueous). 3.16 EPA 8260B Volatile Organics (Aqueous). 3.17 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 7 8 9 10 11 12 13 14 15 16 18 20 22 23 32
4	Quality Control Sample Data. 4.1 MS/MSD. 4.2 PDS/PDSD. 4.3 Sample Duplicate. 4.4 LCS/LCSD.	34 34 52 54 63
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7	Chain-of-Custody/Sample Receipt Form	87



Work Order Narrative

Work Order: 16-07-1757 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/26/16. They were assigned to Work Order 16-07-1757.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

SM 5310 B TOC: One or more samples are associated with a Method Blank/ IB/ CCB with a replicate RSD > 10%. All batch QC is in control, no further action taken.

EPA 6020: For 7/29/16 data set - Secondary ICV (M120215A.066) was performed after the ICS analysis, opening ICV (M120215A.055) was performed though target analytes were missing. All batch QC is in control, no further action taken.

EPA 6020: Due to LIMS limitations, the dissolved metals MS/MSD data was not reported. Raw data and summary for the dissolved metals MS/MSD will be included in the level IV data package.



Sample Summary

Client: CH2M HILL Work Order: 16-07-1757

4121 Carmichael Rd Project Name: 3Q2016 SA/PCP & AIG GWS / 654377.82.LB

Montgomery, AL 36106-2801 PO Number: 100067101891 Date/Time 07/26/16 18:42

Received:
Number of 173

Containers:

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2458Q001	16-07-1757-1	07/26/16 07:00	9	Aqueous
HAR19GW01S016	16-07-1757-2	07/26/16 11:00	57	Aqueous
ND135GW01D011	16-07-1757-3	07/26/16 09:00	19	Aqueous
ND135GW01S011	16-07-1757-4	07/26/16 09:00	57	Aqueous
RD49BGW01S005	16-07-1757-5	07/26/16 09:00	31	Aqueous



Sample Analysis Summary Report

Work Order: 16-07-1757				Page 1 of 1
<u>Method</u>	<u>Extraction</u>	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	969	IC 15	1
EPA 504.1	EPA 504.1 Ext.	944	GC 40	1
EPA 6020	EPA 3005A Filt.	598	ICP/MS 03	1
EPA 6020	EPA 3020A Total	598	ICP/MS 03	1
EPA 8015B (M)	EPA 3510C	682	GC 48	1
EPA 8015B (M)	EPA 5030C	902	GC 1	2
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
RSK-175M	N/A	929	GC 14	2
RSK-175M	N/A	1074	GC 52	2
SM 2320B	N/A	650	PH1/BUR03	1
SM 2510 B	N/A	1068	SC 2	1
SM 2540 C	N/A	1009	N/A	1
SM 3500-FeB	N/A	990	UV 7	1
SM 4500 S2 - D	N/A	1064	N/A	1
SM 5310 B	N/A	735	TOC 8	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-07-1757 Page 1 of 1

Qualifiers	<u>Definition</u>					
*	See applicable analysis comment.					
<	Less than the indicated value.					
>	Greater than the indicated value.					
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.					
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.					
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.					
4	The MS/MSD RPD was out of control due to suspected matrix interference.					
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.					
6	Surrogate recovery below the acceptance limit.					
7	Surrogate recovery above the acceptance limit.					
В	Analyte was present in the associated method blank.					
BU	Sample analyzed after holding time expired.					
BV	Sample received after holding time expired.					
CI	See case narrative.					
E	Concentration exceeds the calibration range.					
ET	Sample was extracted past end of recommended max. holding time.					
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.					
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).					
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).					
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.					
JA	Analyte positively identified but quantitation is an estimate.					
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).					
ND	Parameter not detected at the indicated reporting limit.					
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike					

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.

concentration by a factor of four or greater.

Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

COC Number: CALS07261601 **Chain of Custody Record**

CH2MHILL

7/26/2016 1:01:12 PM Page 1 of 10

Project Name SSFL	Location Santa Susana Field Lab	
Task Order 582 Project: 30	Project: 3Q2016 SA/PCP & AIG GWS	
Project Number 654377.82.LB		
Project Manager Jeremy Hilliard		S¹
Sample Manager Jamie Beckett	(530) 570-5084	w60 w60 sw
Turnaround Time 10 Days		S SW8 SW8 SW8 10F SW 10B 162 SM RS R A
PO Number 100067101891		w90 IM- 826 015 801 /60 601 /60 5MFe 254 K17 SK1 376 232
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	50 50 50 50 50 50 50 50
CAQW2458Q001	26-Jul-16 7:00 N Water	
1,4-Dioxane LL	Field Filtered: ☐ 3 HCL pH<24C	
VOCs full list	Field Filtered: ☐ 3 HCL pH<2.4C	
Report Carbon Ranges	Field Filtered: ☐ 3 HCL pH<2 4C	
	Total Containers: 9	

Special Instructions:	CH582 PO: 100067101891		Report Copy to	Jon Freed (208) 660-4929
	ATTN:	Sample Custody	and	Michele Castro

Shipping Details

MS = Matrix Spike SD = Matrix Spike Duplicate

On Ice: yes / no

Lab Phone: (949) 870-8766 Lab Name: CalScience

072616 1843

Hulle 15 to Airbill No:

Relinquished by

Received by

Approved by

Sampled by

Relinquished by

Received by

7/20/16 1842

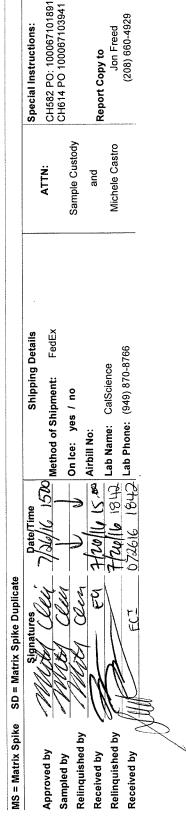


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Chain of Custody Record	1 COC Number: CALS07261601	CHZZELL	1/20/2010 1:01:13 FIM	Page 3 of 10	(12)
Project Name SSFL Task Order 582 Project: 3Q20 Project Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS				
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084		SW		
Turnaround Time 10 Days PO Number 100067101891		E376 A232 504 300	SW6010 10B/602 71625M-1 8500-Fe- SM2540 RSK173	SW8260 SW8015- SW8015	SW900
Sample ID Sa	Sample Date/Time Type Matrix # Containers P	.2 0B	20 LL -D 0C 5M	0B -P 5B	
V01S016MS	26-Jul-16 11:00 MS Water				
005	Field Filtered: 2	4'C			
1,4-Dioxane LL	Field Filtered: 3 HCL p	HCL pH<2 4C			
Methane, ethene	Field Filtered: 3 HCL p	HOL pH<2 4C			
Mn	Field Filtered: 1 HNC	HNO3, 4'C			
Ferrous Iron	Field Filtered: 1	4'C			
Conductivity	Field Filtered: 1	4'C			
Sulfide	Field Filtered: 1 NaOH,	NaOH, ZnAc, 4'C			
100	Field Filtered: 1 H2SO4,	H2SO4, pH<2, 4°C			□ >
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: 1 HNC	HN03, 4'C			
NDMA - LL	Field Filtered: 2	4'C			
EDB/DBCP	Field Filtered: 3 Na2S	Na2S203, 4'C			
	Total Containers:	19			





Special Instructions:	CH582 PO: 100067101891	CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929			
	ATTN:	-	Sample Custody	and	Michele Castro				
Shipping Details	Method of Shipment: FedEx		On ice: yes / no	IS AIRBIII NO:	1842 Lab Name: CalScience	772616 1842 Lab Phone: (949) 870-8766			
,Date/Time	025/ 2/198/	•	€	7/20/11 1500	7-126/16 18-42	2481 919810			
Signatures	Mary Com	I Musel Min	Must Cli	ST TE				2	
	Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by	Z'	Ž	

MS = Matrix Spike SD = Matrix Spike Duplicate

Chain of Custody Record	COC Number: CALS07261601	101	CH2MHILL	Ž			7/26/2016 1:01:13 PM	1:01:	13 P.N		age	Page 4 of 10	0		<u></u>	1787)	7
Project Name SSFL Location Santa Task Order 582 Project: 3Q2016 SA/PCP & A Project Number 654377.82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067101891 Sample ID	Susana Field Lab IG GWS 70-5084 e Type Matrix	# Containers Preserv	300.0	A2320B 504.1	E376.2	RSK175M RSK175	SM2540C	SW1625M-LL SM3500-Fe-D	SW6010B/6020	SW6010F	SW6010F/6020	SW8015-P SW8015B	SW8260B	SW8260BSIM-LL	SW9050	SW9060	
HAR19GW01S016SD 26-Jul-16	l6 11:00 SD Water																
002	Field Filtered:	2 4'C				<u>S</u>											
1,4-Dioxane LL	Field Filtered:	3 HCL pH<2 4C						H						3		H	
Methane, ethane, ethene	Field Filtered:	3 HCL pH<24C				<u> </u>										H	
Mn	Field Filtered:	1 HNO3, 4'C						П		3							
Ferrous Iron	Field Filtered:	1 4'C						S									
Conductivity	Field Filtered:	1 4'C													2		
Sulfide	Field Filtered:	1 NaOH, ZnAc, 4'C	4'C		<u>></u>												
TOC	Field Filtered:	1 H2SO4, pH<2, 4'C	,4°C													2	
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered:	1 HNO3, 4'C							3								
NDMA - LL	Field Filtered:	2 4'C						S									
EDB/DBCP	Field Filtered:	3 Na2S203, 4'C	<u>ာ</u>	_ \S													
de justice de la constant de la cons	Total Containers:	itainers: 19	Montepartin					TOTAL PROPERTY.									- Contraction





Chain of Custody Record	COC Number: CALS07261601	CH2NHILL 7/26/2016 1:01:13 PM Page 7 of 10
Project Name SSFL Task Order 582 Project: 3Q20-Project Number 654377.82.LB	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 77.82.LB	
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	SW60 SW60 SW
Turnaround Time 10 Days PO Number 100067101891		SW900 SW900 SW8015- SW8015- SW8015- SW8011- 10F/602 SW6010 10B/602 (1625M-1 1500-Fe- SM2540 RSK17: RSK17: A2320 504 300
Sample ID Sai	Sample Date/Time Type Matrix # Containers Preserv	600 LLL DB -P 55B 200 DF 200 LLL -D 75 .2 DB .1
ND135GW01S011MS 26	26-Jul-16 9:00 MS Water	
002	Field Filtered: 2 4'C	
1,4-Dioxane LL	Field Filtered: 3 HCL pH<2 4C	
Methane, ethane, ethene	Field Filtered: 3 HCL pH<24C	
Mn	Field Filtered: ✓ 1 HN03, 4'C	
Ferrous Iron	Field Filtered: ✓ 1 4'C	
Conductivity	Field Filtered: 1 4'C	
Sulfide	Field Filtered: 1 NaOH, ZnAc, 4'C	
T0C	Field Filtered: ☐ 1 H2SO4, pH<2, 4'C	4¢
Ba, B, Ca, Mg, K, Na, Sr	Field Filtered: ☐ 1 HNO3, 4'C	
NDMA - LL	Field Filtered:	
EDB/DBCP	Field Filtered: 3 Na2S203, 4'C	
	Total Containers: 19	
	TO THE THE THE THE THE THE THE THE THE THE	









COC Number:	er: CALS07261601	U	CH2MHILL 7/26/2016 1:01:14 PM	7/26	/2016	1:01:1	4 PM	Рас	Page 10 of 10	of 10				7	1787
roject Name SSFL Location Santa Susana Field Lab ask Order 582 Project: 3Q2016 SA/PCP & AIG GWS	Susana Field Lab 3 GWS					,									\
roject Number 1994-377.02.Lb roject Manager Jeremy Hilliard ample Manager Jamie Beckett (530) 570-50	0-5084						SW60	SW60		·····	SW826				
urnaround Time 10 Days O Number 100067101891			E376 A2320 504	RSK17	SM254	1625M-1	10B/602	10F/602 SW6010	SW801	SW8260 SW8015-	OBSIM-I	SW905	SW906		
sample ID Sample Date/Time	Type Matrix # Containers	rs Preserv	.2 DB						БВ			50	50		,
TDS	Field Filtered: 1	4'C			<u>S</u>										
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C							<u> </u>						
VOCs full list	Field Filtered: 3	HCL pH<2 4C								<u>></u>					
EDB/DBCP	Field Filtered: 3	Na2S203, 4'C													
Report Carbon Ranges	Field Filtered: 3	HCL pH<2 4C								<u>\</u>					
	Total Containers:	: 31													
	de la companya de la			The second second	Access to be a control from										ŧ.

MS = Matrix Spike	SD = Matrix Spike Duplicate				
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by	Mater Chris	0as1 91/918/L	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	mented aller				CH614 PO 100067103941
Relinquished by	most Chi	ر ج	On ice: yes / no	Sample Custody	
Received by		7/20/11 1980	Airbill No:	and	Report Conv to
Relinquished by		750 M27	(842) Lab Name: CalScience	Michele Castro	Jon Freed
Received by		572616 (842	72616 (842) Lab Phone: (949) 870-8766		(208) 660-4929
•			a		
	_				

Calscience

WORK ORDER NUMBER: 16-07- 97 of 500

SAMPLE RECEIPT CHECKLIST

COOLER _ 1_ OF _ 3_

LIENT:	<u>CH2m</u>	Hill	:	DATE: 07 / <u>교</u> / 2010
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TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.7°C (w/ CF): 3.7°C; I	ra blank	□ Sam	nla
☐ Sample(s) outside temperature criteria (PM/APM contacted by:)	△ Diatin i	LI Jam	bie
☐ Sample(s) outside temperature criteria (PN/APN/Contacted by:) ☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling			
☐ Sample(s) received at ambient temperature; placed on ice for transport by courier			
Ambient Temperature: Ambient Temperature:	Checked	d bv:	804 1
Ambient remperature. 17 m. 17 m.c.	VII.	u .,.	
CUSTODY SEAL:		(C- 11
Cooler ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked		
Sample(s) ☐ Present and Intact ☐ Present but Not Intact ☐ Not Present ☐ N/A	Checked	d by: <u>/</u>	017
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	. 6		
COC document(s) received complete			
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished time	ł		
Sampler's name indicated on COC			
Sample container label(s) consistent with COC			
Sample container(s) intact and in good condition	/		
Proper containers for analyses requested			
Sufficient volume/mass for analyses requested			
Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time			-
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen			
Proper preservation chemical(s) noted on COC and/or sample container	/		
Unpreserved aqueous sample(s) received for certain analyses	₹	-	
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals			
Container(s) for certain analysis free of headspace			
□ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500)		·	
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation			
Aqueous: DVOA DVOAh DVOAna2 D100PJ D100PJna2 D125AGB D125AGBh D125		25PR	/
☐ 125PBznna ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 250PBn ☐ 250PBn ☐ 500AGB ☐ 500AGJ			
\cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot \cdot			ļ
Solid: Sol			
Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Other Matrix (): □			
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Ziploc/Res			,
Preservative: $\mathbf{b} = \text{buffered}$, $\mathbf{f} = \text{filtered}$, $\mathbf{h} = \text{HCI}$, $\mathbf{n} = \text{HNO}_3$, $\mathbf{na} = \text{NaOH}$, $\mathbf{na}_2 = \text{Na}_2\text{S}_2\text{O}_3$, $\mathbf{p} = \text{H}_3\text{PO}_4$, Labelet		<i>OTI III</i>	017
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn}(CH_3CO_2)_2 + \text{NaOH}$	Reviewed	/ 2	081-

WORK ORDER NUMBER: 16-07 00 \$8705 1990

SAMPLE RECEIPT CHECKLIST COOLER 2 OF 3

DATE: 07 / 26 / 2016

CLIENT: CHZM HILL	DATE: 07	126	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3.6 °C (w/ CF): 3.6 Sample(s) outside temperature criteria (PM/APM contacted by:) Sample(s) outside temperature criteria but received on ice/chilled on same day of sampli Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	ing	□ Sam ed by: <u>&</u>	
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N// Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N//		ed by: ed by:	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete Sampling date Sampling time Matrix Number of containers	Yes	No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses	🗖 🖯		p
□ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace □ Volatile Organics □ Dissolved Gases (RSK-175) □ Dissolved Oxygen (SM 4500) □ Carbon Dioxide (SM 4500) □ Ferrous Iron (SM 3500) □ Hydrogen Sulfide (Hach)	🗖	Ø	
Tedlar™ bag(s) free of condensation CONTAINER TYPE:	lumber: 125AGBp	AGJs))
Container: $A = Amber$, $B = Bottle$, $C = Clear$, $E = Envelope$, $G = Glass$, $J = Jar$, $P = Plastic$, and $Z = Ziplo Preservative$: $b = buffered$, $f = filtered$, $h = HCI$, $n = HNO_3$, $na = NaOH$, $na_2 = Na_2S_2O_3$, $p = H_3PO_4$, $S = H_2SO_4$, $u = ultra-pure$, $znna = Zn(CH_3CO_2)_2 + NaOH$	oc/Resealable B abeled/Checke Reviewe	ed by: $\frac{1}{\sqrt{2}}$	017

WORK ORDER NUMBER: 16-07 age 99 7 90 7

SAMPLE RECEIPT CHECKLIST

cooler <u>3</u> of <u>3</u>

DATE: 07 / <u>2.6</u> / 2016

CLIENT: CHZM HILL	DATE: 07 /	<u>26</u> / 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF): 3 · 6 °C (w/ CF): 3 · 6 °	ng	⊒ Sample I by: <u>&DY</u>
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ N/A Sample(s) □ Present and Intact □ Present but Not Intact □ Not Present □ N/A	A Checked	1 by: <u>80 4</u> 1 by: <u>1017</u>
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete □ Sampling date □ Sampling time □ Matrix □ Number of containers	J	No N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC Sample container label(s) consistent with COC Sample container(s) intact and in good condition Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time	p	
Aqueous samples for certain analyses received within 15-minute holding time □ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen Proper preservation chemical(s) noted on COC and/or sample container Unpreserved aqueous sample(s) received for certain analyses		
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace		
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach) Tedlar™ bag(s) free of condensation		
CONTAINER TYPE: Aqueous: □VOA □VOAh □VOAna₂ □100PJ □100PJna₂ □125AGB □125AGBh □ □125PBznna □250AGB □250CGB □250CGBs □250PB □250PBn □500AGB □50 □500PB □1AGB □1AGBna₂ □1AGBs □1PB □1PBna □ □ □ □ □ Solid: □4ozCGJ □8ozCGJ □16ozCGJ □Sleeve (□ □ □ □ □ □ □ □ □ □ □ □ □ □ Air: □Tedlar™ □Canister □Sorbent Tube □PUF □ □ Other Matrix (□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	125AGBp	GJ s

SAMPLE ANOMALY REPORT

DATE: 07 / 1/2016

SAMPLES, CONTAINERS, AND LABELS:	Comments
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired (list client or ECI sample ID and analysis)	
☐ Insufficient sample amount for requested analysis (list analysis)	
☐ Improper container(s) used (list analysis)	
☐ Improper preservative used (list analysis)	
☐ No preservative noted on COC or label (list analysis and notify lab)	
☐ Sample container(s) not labeled	
☐ Client sample label(s) illegible (list container type and analysis)	
☐ Client sample label(s) do not match COC (comment)	
☐ Project information	
☐ Client sample ID	
☐ Sampling date and/or time	
☐ Number of container(s)	
☐ Requested analysis	
☐ Sample container(s) compromised (comment)	
☐ Broken	
☐ Water present in sample container	
☐ Air sample container(s) compromised (comment)	
□ Flat	
☐ Very low in volume	
☐ Leaking (not transferred; duplicate bag submitted)	
□ Leaking (transferred into ECI Tedlar™ bags*)	
☐ Leaking (transferred into client's Tedlar™ bags*)	
* Transferred at client's request.	
MISCELLANEOUS: (Describe)	Comments
HEADSPACE:	
(Containers with bubble > 6 mm or ¼ inch for volatile organic or dissolved gas analysis)	(Containers with bubble for other analysis) ECI ECI Total
ECI ECI Total ECI ECI Total Sample ID Container ID Number**	Sample ID Container ID Number** Requested Analysis
-1 C,F,T 9	2.4 C3.03Es I Ferrous Iron
-5 0 12	3 5' 1
	5 DZ 111
Comments:	Reported by: \$02/1017
** Record the total number of containers (i.e., vials or bottles) for the affected sample.	Reported by: \$1017 Reviewed by: 681.
"" Record the total number of containers (i.e., vials of bottles) for the affected sample.	



Calscience



WORK ORDER NUMBER: 16-07-1871

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/17/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: 3Q2	016 SA/PCP & AIG	G GWS / 666267.1	4.Q3.FW
--------------------------	------------------	------------------	---------

Work Order Number: 16-07-1871

1	Work Order Narrative	3
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3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1871 EPA 8315 Formaldehyde and EPA 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-07-1871 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/27/16. They were assigned to Work Order 16-07-1871.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name:

16-07-1871

3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers:

07/27/16 09:30

r of 12

Attn: Jeremy Hilliard

Sample IdentificationLab NumberCollection Date and TimeNumber of ContainersMatrixHAR19GW01S01616-07-1871-107/26/16 11:0012Aqueous



Ζ

Glossary of Terms and Qualifiers

Work Order: 16-07-1871 Page 1 of 1

<u>Qualifiers</u>	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
Χ	% Recovery and/or RPD out-of-range.

Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

CH2NHILL 7/26/2016 1:05:48 PM

COC Number: CALS07261604

16-07-1871

Chain of Custody Record	rd COC Number: CALS07261604	
Project Name SSFL Task Order 614 Project: 302 Project Number 666267.14.03.FW	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 67.14.Q3.FW	
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084	
Turnaround Time 10 Days		
PO Number 100067103941		315A
Sample ID	Sample Date/Time Type Matrix # Containers P	Preserv
HAD19CW01S016	26-Jul-16 11:00 N Water	
Formaldehyde	Field Filtered: 2	
1,1-ОМН, UDМН	Field Fittered: ☐ 2	
	Total Containers:	7
UAD49CW04S016MS	26-Jul-16 11:00 MS Water	
Formaldehyde	Field Filtered: 2	4,6
1,1-DMH, UDMH	Field Filtered: ☐ 2	
	Total Containers:	4
LADAGEWOOD STATES OF THE PROPERTY OF THE PROPE	26-Jul-16 11:00 SD Water	
Formaldehyde	Field Filtered: ☐ 2	
1,1-DMH, UDMH	Field Filtered: 2	\$
	Total Containers:	4 - The second s
NO ALEXANDER TO THE THE PROPERTY OF THE PROPER	AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	

	Special instructions.	CH582 PO: 100067101891	CH614 PO 100067103941	·	Convert Converts	Jon Freed	(208) 660-4929		
	:	ATTN:		Sample Custody	and	Kay Hower			
A STATE OF THE STA	Shipping Details	•	//ww//2 1000 Method of Shipment: FedEx	On ice: yes I no	Airbill No:	Lab Name: Lancaster Laboratories	Lab Phone: (318) 618-8889		
MS = Matrix Snike SD = Matrix Spike Duplicate	Signatures Date/Time		Mari Charl Mari Joseph Jacob	T,	Mittel Clin		COX "1"	140 110 0 120 120 0730	
MC - Matrix Snike	Sudo Supur - Car		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by	

Lancaster Laboratories
Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

155318

Group Number(s): 1687559

Client: CH2M

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/27/2016 9:30

1877,

Number of Packages:

2

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes Yes Air Quality Samples Present:

No

Samples Intact: Missing Samples:

No

Extra Samples:

No No

Unpacked by Krista Abel (3058) at 09:51 on 07/27/2016

Discrepancy in Container Qty on COC:

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	ce Type	Ice Present?	Ice Container	Elevated Temp?
1	32170023	1.7	IR	Wet	Υ	Loose	N
9	32170023	1.6	IR	Wet	Y	Loose	N

alscience

WORK ORDER NUMBER: 16-07- 1897

SAMPLE RECEIPT CHECKLIST

COOLER OF	
-----------	--

CLIENT:			DAT	ſE: 07 /	/	2016			
TEMPERATURE: (Criteria: 0.0°C − 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC1B (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):°C; □ Blank □ Sample □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling □ Sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter Checked by:									
	ent but Not Intact ent but Not Intact	☐ Not Present☐ Not Present	□ N/A □ N/A		d by: d by:				
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received to COC document(s) received complete	ix 🛮 Number of co	ntainers		Yes	No	N/A			
☐ No analysis requested ☐ Not relinquished Sampler's name indicated on COC	0			_ _ _	_ _ _				
Proper containers for analyses requested Sufficient volume/mass for analyses requested Samples received within holding time	O_{I}				_ _ _				
□ pH □ Residual Chlorine □ Disselved Su Proper preservation chemical(s) noted on COC Unpreserved aqueous sample(s) received for □ Volatile Organics □ Total Meta's □ Disselved Su	ander sample conte settain analyses	<i>M</i> .							
Container(s) for certain analysis free to headspa ☐ Volatile Organics ☐ Dissolved Cases (RS ☐ Carbon Dioxide (SM 4501) ☐ Ferrous Iron	ice SK-175) 🗆 Dissolve	ed Oxygen (SM 450	00)						
Tedlar™ bag(s) free of condensation									
CONTAINER TYPE: Aqueous: □ VOA □ VOAn □ VOAna₂ □ 100F □ 125PBznna □ 250AGB ☑ 250CGB □ 250C □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1 Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ SI Air: □ Tedlar™ □ Canister □ Sorbent Tube □ Container: A = Amber, B = Bottle, C = Clear, E = Enveropreservative: b = buffered, f = filtered, h = HCl, n = H	GBs	125AGB ☐ 125AG 250PBn ☐ 500AGE ☐ ☐ ☐ Cores® (3 □ 500AGJ	GBp	25PB GJs				
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = Zn(CH_3CO_2)_2 + NaOH$ Reviewed by:									



Subcontractor Analysis Report

Work Order: 16-07-1871 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 17, 2016

Project: 16-07-1871

Submittal Date: 07/27/2016 Group Number: 1687559 SDG: CSF17 PO Number: 16-07-1871 State of Sample Origin: CA

 Client Sample Description
 (LL) #

 HAR19GW01S016 Water
 8495018

 HAR19GW01S016MS Water
 8495019

 HAR19GW01S016SD Water
 8495020

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience Attn: Terri Chang Electronic Copy To Eurofins Calscience Attn: Richard Villafania

Respectfully Submitted,

Kay Mour

(510) 672-3979

otactac C ot can to C

> > > SW8315A 5 > > SW8315 Sample Date/Time Type Matrix # Containers Preserv **4**¹C 4.0 4¹C 4^C 4,C 4^cC Total Containers: Total Containers: Total Containers: 0 0 Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Field Filtered: Location Santa Susana Field Lab Water MS Water SD Water z Task Order 614 Project: 3Q2016 SA/PCP & AIG GWS Project Number 666267.14.Q3.FW (530) 570-5084 11:00 11:00 11:00 26-Jul-16 26-Jul-16 26-Jul-16 Project Manager Jeremy Hilliard Sample Manager Jamie Beckett 10Days PO Number 100067103941 HAR19GW01S016MS HAR19GW01S016SD HAR19GW01S016 Project Name SSFL Turnaround Time 1,1-DMH, UDMH 1,1-DMH, UDMH 1,1-DMH, UDMH Formaldehyde Formaldehyde Formaldehyde Sample ID

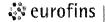
Page 1 of 1

CH2PHILL 7/26/2016 1:05:48 PM

COC Number: CALS07261604

Chain of Custody Record

	Special Instructions:	ATTN: CH582 PO: 100067101891	Sample Custody	7	and Report Copy to	Kay Hower	(208) 660-4929
		⋖	Samp			Ka	
	Shipping Details	Method of Shipment: FedEx	On Ice: ves / no	Airhil No:		Lab Name: Lancaster Laboratories	722/16 093 Lab Phone: (318) 618-8889
	Date/Time	7/26/15 1600		6		100000 TO THE TOTAL THE TO	X22/16 093P
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures,	Matel Cles	Muth Clui	Motor Clin	(MAN AND IN
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished hy	Received by



Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log Rage 17 of 185318 Group Number(s): 1687559

Client: CH2M

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

07/27/2016 9:30

Number of Packages:

<u>2</u>

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

Yes

Sample Date/Times match COC:

Yes

Custody Seal Intact:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Samples Chilled:

Yes

Total Trip Blank Qty:

0

Paperwork Enclosed:

Yes

Air Quality Samples Present:

No

Samples Intact:

Yes

Missing Samples:

No

Extra Samples:

Nο

Discrepancy in Container Qty on COC:

Νo

Unpacked by Krista Abel (3058) at 09:51 on 07/27/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#	Thermometer ID	Corrected Temp	Therm. Type	<u>lce Type</u>	Ice Present?	Ice Container	Elevated Temp?
1	32170023	1.7	IR	Wet	Υ.	Loose	N
2	32170023	1.6	IR	Wet	Υ	Loose	N

Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

less than <

greater than >

parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For ppm aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

parts per billion ppb

Dry weight Results printed under this heading have been adjusted for moisture content. This increases the analyte weight basis concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Calscience



WORK ORDER NUMBER: 16-07-1953

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/12/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: 3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.F

Work Order Number: 16-07-1953

1	Work Order Narrative	3
2	Sample Summary	2
3	Client Sample Data	5
4	Quality Control Sample Data	6
5	Sample Analysis Summary	7
6	Glossary of Terms and Qualifiers	8
7	Chain-of-Custody/Sample Receipt Form	Ç



Work Order Narrative

Work Order: 16-07-1953 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 07/28/16. They were assigned to Work Order 16-07-1953.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-07-1953

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers: 07/28/16 18:20

1

Attn: Jeremy Hilliard

Number of Containers Sample Identification Lab Number **Collection Date and Time** Matrix HAR11GW01S008 16-07-1953-1 07/28/16 11:45 Aqueous







Sample Analysis Summary Report

Work Order: 16-07-1953				Page 1 of 1
Method	Extraction	Chemist ID	<u>Instrument</u>	Analytical Location
EPA 350.1	N/A	735	ACA 1	1



Glossary of Terms and Qualifiers

Work Order: 16-07-1953 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

Χ

The sample extract was subjected to Silica Gel treatment prior to analysis.

% Recovery and/or RPD out-of-range.

SG

Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

> Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

> Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

				A
Location Santa Susana Field Lab Project 3Q2016 SA/PCP & AIG GWS 37.14.Q3.FW 19 Hilliard 19 Beckett (530) 570-5084 Days	SM4500NH3			
Sample Date/Time Type Matrix # Containers Pre				
28-Jul-16 11:45 N Water				
Field Filtered 1 H2SO4, ph	4.2, 4'C ▼ □ □ □ □ □ □ □			
Total Containers:	1			
70-£	5084 Type Matrix # Containers Pre N Water Field Filtered 1 H2SO4, pt	5084 Type Matrix # Containers Preserv N Water Field Filtered 1 H2SO4, pH<2, 4'C	5084 Type Matrix # Containers Preserv N Water Field Filtered □ 1 H2SO4, pH<2, 4/C □ □ □ □ □ □ □ □ Total Containers: 1	3084 Type Matrix # Containers Preserv N Water Field Filtered □ 1 H2SO4, pH<2, 4°C □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

* The state of the	Special Instructions:	CH582 PO: 100067101891	CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929	
		ATTN:		Sample Custody	and	Michele Castro		
	Shipping Details	Method of Shipment: FedEx		On ice: yes / no	Airbiil No:	Cal Science Lab Name: CalScience	75/16 18:20 Lab Phone: (949) 870-8766	
	Date/Time	11/16 150		ک	SI IIII	2/18/1 18:20	01:31 91/84	,
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures	Mary Cilar	May wan	Matel Clean	St.		Lus Mhunda	7
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by	

WORK ORDER NUMBER: 16-07-10 of 1953

SAMPLE RECEIPT CHECKLIST COOLER 1 OF 1

CLIENT: _	CH2M Hill	-	DAT	E: 07 /	<u>26</u> 1	/ 2016
Thermome Sam Sam Sample	ATURE: (Criteria: 0.0°C - 6.0°C, not frozen except se eter ID: SC1B (CF: 0.0°C); Temperature (w/o CF):	ed by:) e/chilled on same day of s		Blank I		
CUSTOD' Cooler Sample(s)	☐ Present and Intact ☐ Present but Not Intac		□ N/A □ N/A	Checked Checked		
Chain-of-0 COC docu □ Sam	CONDITION: Custody (COC) document(s) received with samples ument(s) received complete	of containers		Yes D	No	N/A
Sampler's Sample co Sample co Proper co Sufficient	analysis requested					
Aqueo pH Proper pr	bus samples for certain analyses received within 15-m Residual Chlorine Dissolved Sulfide Dissolved Sulfide Dissolved Sulfide Served aqueous sample(s) received for certain analyses	inute holding time blved Oxygen container				0
Container Vola	atile Organics	ssolved Oxygen (SM 4500 □ Hydrogen Sulfide (Hac	D) h)			p/
CONTAIN Aqueous 125PB: 500PB Solid:	bag(s) free of condensation NER TYPE: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJnaz znna □ 250AGB □ 250CGB □ 250CGBs □ 250PE □ 1AGB □ 1AGBna₂ □ AGBs □ 1PB □ 1PBnaz 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () edlar™ □ Canister □ Sorbent Tube □ PUF □	(Trip Blank a₂ □ 125AGB □ 125AGB B □ 250PBn □ 500AGB a □ □ □	Lot Number Bh □ 125A □ 500AG □ □ □ FerraCores®	er: GBp	125PB \GJs	
Container: Preservati	: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glassive: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOlos = H ₂ SO ₄ , u = ultra-pure, znna = Zn(CH ₃ CO ₂) ₂ + NaOlos	H, $na_2 = Na_2S_2O_3$, $p = H_3PO_3$	= Ziploc/Res 4, Labele	ealable Bad/Checke Reviewe	ag ed by: _a ed by: _	1917



Calscience



WORK ORDER NUMBER: 16-08-0986

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 08/25/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name: 3	Q2016 SA/PCP & A	AIG GWS /	666267.14.Q3.FW
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Work Order Number: 16-08-0986

1	Work Order Narrative	3
2	Sample Summary	4
3	Client Sample Data. 3.1 EPA 300.0 Anions (Aqueous). 3.2 EPA 314.0 Perchlorate (Aqueous). 3.3 EPA 8330 Nitroaromatics and Nitramines (Aqueous). 3.4 EPA 350.1 Ammonia (Aqueous). 3.5 EPA 8015B (M) C8-C40 (Aqueous). 3.6 EPA 1625C (M) NDMA (Aqueous). 3.7 EPA 8270C SIM (Aqueous). 3.8 EPA 8260B Volatile Organics (Aqueous). 3.9 EPA 8260B SIM Emergent Volatiles (Aqueous).	5 6 7 10 11 13 14 16 34
4	Quality Control Sample Data.4.1 MS/MSD.4.2 LCS/LCSD.	36 36 42
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Work Order Narrative

Work Order: 16-08-0986 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 08/12/16. They were assigned to Work Order 16-08-0986.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-08-0986

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers: 08/12/16 17:45

56

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
CAQW2471Q001	16-08-0986-1	08/12/16 07:00	6	Aqueous
RD68AGW01S006	16-08-0986-2	08/12/16 10:30	18	Aqueous
RD68BGW01S006	16-08-0986-3	08/12/16 11:30	18	Aqueous
SP29BGW01D003	16-08-0986-4	08/12/16 09:30	7	Aqueous
SP29BGW01S003	16-08-0986-5	08/12/16 09:30	7	Aqueous





Sample Analysis Summary Report

Work Order: 16-08-0986				Page 1 of 1
Method	Extraction	Chemist ID	Instrument	Analytical Location
EPA 1625C (M)	EPA 3520C	907	GC/MS III	1
EPA 300.0	N/A	1083	IC 15	1
EPA 314.0	N/A	1037	IC 13	1
EPA 350.1	N/A	650	ACA 1	1
EPA 8015B (M)	EPA 3510C	1027	GC 45	1
EPA 8260B	EPA 5030C	486	GC/MS QQ	2
EPA 8260B SIM	EPA 5030C	486	GC/MS M	2
EPA 8270C SIM	EPA 3510C	907	GC/MS MM	1
EPA 8330	EPA 8330	834	HPLC 7	1

Location 1: 7440 Lincoln Way, Garden Grove, CA 92841 Location 2: 7445 Lampson Avenue, Garden Grove, CA 92841



Glossary of Terms and Qualifiers

Work Order: 16-08-0986 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

- SG The sample extract was subjected to Silica Gel treatment prior to analysis.
- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

L

	Special Instructions:	CH582 PO: 100067101891	CH614 PO 100067103941		Report Copy to	Jon Freed	(208) 660-4929	
		ATTN:	-	Sample Custody	and	Michele Castro		
	Shipping Details	Method of Shipment: FedEx	;	dnice: yes / no	Arbill No:	Tab Name: CalScience	1人 (予め) Lab Phone: (949) 870-8766	
	Date/Time	2 2 2	4171	利力に	412/16 14.75	\$10/16/49	8/17/18 (PH)	
MS = Matrix Spike SD = Matrix Spike Duplicate	Signatures		Shully Omison		Twee abosho	Tidea Relayla	DAUNGY Par	
MS = Matrix Spike		Approved by	Sampled by	Relinquished by	Received by	Relinquished by	Received by	



	Contents	
	eturn to	

Task Order 614 Project: 3Q2016 SA/PCP & Al Project Number 666267.14.Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett Turnaround Time 10 Days PO Number 100067103941 Sample ID	2016 SA/PCP & AIG GWS (530) 570-5084 Samula Date/Time Tyne Matrix #Containers	ners Preserv	SW8330A SW8260BSIM-LL SW8260B SW8015B SW6850 SW1625M-LL SM4500NH3F E314.1 8270CSIM 300.0	
V01S006	0 N Water			
1,4-Dioxane LL	Field Filtered: 3	HCL pH<2 4C		
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered: 2	4'C		
Fluoride, Nitrate	Field Filtered:	4°C		
Ammonia	Field Filtered:	H2SO4, pH<2, 4'C		
NDMA - LL	Field Filtered: 2	4'C		
incl. Pthalates	Field Filtered: 2	4'C		
Perchlorate	Field Filtered:	4'C		
Perchlorate - HOLD	Field Filtered:	4'C		
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C		
VOCs full list	Field Filtered: 3	HCL pH<2 4C		
	Total Containers	18		

CH2NHILL 8/12/2016 2:03:15 PM Page 2 of 4

COC Number: CALS08121601

Chain of Custody Record

S = Matrix Spike	MS = Matrix Spike SD = Matrix Spike Duplicate	\			
	Signatures	Date/Time	Shipping Details		Special Instructions:
Approved by		4/2/1	Method of Shipment: FedEx	ATTN:	CH582 PO: 10006710189
Sampled by	Shether Dawson	2 Z	:		CH614 PO 10006710394
Relinquished by		812 × 38	Challe Jet Con Ice: yes ino	Sample Custody	
Received by	Took Othocho	1/11/1/14	Airbill No:	and	Report Conv to
Relinquished by	2/2	12/11/2/20	Tag Name: CalScience	Michele Castro	Jon Freed
Received by		76.01	12/16 1714 Lab Phone: (949) 870-8766		(208) 660-4929
	Type				



	4	

Chain of Custody Record COC	COC Number: CALS08121601	CHZ	CH2MHILL	8/12/2016 2:03:15 PM	16 2:0:	1:15 PM	Page	Page 3 of 4		6	(Ž
Project Name SSFL Location Santa Su	Location Santa Susana Field Lab										
9999									 	 	
						SW8			 	 	***************************************
Sample Manager Jamie Beckett	(530) 570-5084		SM			26			 	 	
Turnaround Time 10 Days			450 E		SW					 	
PO Number 100067103941		300.	0NH3	W685	18260	1833C			 		**********
Sample ID Sample Date/Time	te/Time Type Matrix # Containers	Preserv 0	F 1		В				 	 	
RD68BGW01S006 12-Aug-16	11:30 N Water										
1,4-Dioxane LL	Field Filtered: 3	HCL pH<2 4C				<u></u>					t
Nitrobenzene, 1,3-Dinitrobenzene	Field Filtered: 2	4'C [2					lim
Fluoride, Nitrate	Field Filtered: 1	4'C									
Ammonia	Field Filtered: 1 H2	H2SO4, pH<2, 4'C	5								lm
NDMA - EL	Field Filtered: 2	4.C									lim
ind, Pthalates	Field Filtered: 2	4'C [5									
Perchlorate	Field Filtered:	4.C	<u> </u>								lm
Perchlorate - HOLD	Field Filtered:	4'C		3							
Report Carbon Ranges incl. EFH C8-C30 Total	Field Filtered: 2	4'C		>							
VOCs full list	Field Filtered: 3	HCL pH<2 4C			S						
	Total Containers:	18								 	

SD = Matrix Spike Duplicate			4	
Signatures Date/Time	Shipping Details		Special Instructions:	
N 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891	
10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	On Ice: yes / no	Sample Custody	CH614 PO 10006/103941	
2/11/1/20	Airbill No:	and	Bonort Conv to	
ale 10/6/10 8/10/16 19th	Lab Name: CalScience	Michele Castro	Jon Freed	
Share our Sirie was	16 (7) (Lab Phone: (949) 870-8766		(208) 660-4929	

MS = Matrix Spike

Approved by
Sampled by
Relinquished by
Received by
Relinquished by

Received by

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Project Name SSFL Location	Location Santa Susana Field Lab	
Project: 3Q2		
Project Number 666267.14.03.FVV Project Manager Jeremy Hilliard		SI
Sample Manager Jamie Beckett	(530) 570-5084	SW
Turnaround Time 10Days		11625N (4500N E31
	Sample Date/Time Type Matrix # Containers Preserv	M-LL 260B 015B 5850 M-LL NH3F L4.1 CSIM
SP29BGW01D003 12-Aug-16	1-16 9:30 N Water	
1,2,3-TCP, 1,4-Dioxane LL	Field Filtered: 3 HCL pH<2 4C	
Fluoride	Field Filtered: 1 4'C	
VOCs full list	Field Filtered: 3 HCL pH<2 4C	
	Total Containers: 7	
SP29BGW01S003 12-Aug-16	1-16 9:30 N Water	
1,2,3-TCP, 1,4-Dioxane LL	Field Filtered: 3 HCL pH<2 4C	
Fluoride	Field Filtered: 1 4'C	
VOCs full list	Field Filtered: ☐ 3 HCL pH<2 4C	
	Total Containers: 7	
MANAGEMENT OF THE PROPERTY OF		

MS = Matrix Spike SU	WS = Matrix Spike SD = Matrix Spike Duplicate Signatures	Shipping Details		Special Instructions:
Approved by		Method of Shinment: FedEx	ATTN:	CH582 PO: 100067101891
Sampled by	The My Dawson 18/12/16	į	-	CH614 PO 100067103941
Relinquished by		the on the year ind	Sample Custody	
Received by	1/2/16	(445 Airbiil No:	and	Report Copy to
Relinquished by	he selected thelle 1745	Lab Name: CalScience	Michele Castro	Jon Freed
Received by	1000 my 1000	7 (6 13 Tab Phone: (949) 870-8766		(208) 660-4929

WORK ORDER NUMBER: 16-08 5800 5800 Coler Cooler Coo

. 01,20,42,0	
	DATE: 08 / /2 / 2016

CLIENT: CH2M HILL	DATE: 08	112	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC2A (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF):	ling		
Ambient Temperature: □ Air □ Filter	Check	ed by: _	659
CUSTODY SEAL: Cooler □ Present and Intact □ Present but Not Intact □ Not Present □ Not Present		ed by: _	659
SAMPLE CONDITION:	Yes	No	N/A
Chain-of-Custody (COC) document(s) received with samples	<u>a</u>		
COC document(s) received complete	ø		
☐ Sampling date ☐ Sampling time ☐ Matrix ☐ Number of containers			
☐ No analysis requested ☐ Not relinquished ☐ No relinquished date ☐ No relinquished	ed time		
Sampler's name indicated on COC			
Sample container label(s) consistent with COC			
Sample container(s) intact and in good condition			
Proper containers for analyses requested	🗗		
Sufficient volume/mass for analyses requested	Ø		
Samples received within holding time			
Aqueous samples for certain analyses received within 15-minute holding time			
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen	П		Ø
Proper preservation chemical(s) noted on COC and/or sample container			
Unpreserved aqueous sample(s) received for certain analyses	,		
□ Volatile Organics □ Total Metals □ Dissolved Metals	,		
Container(s) for certain analysis free of headspace	🗹		
✓ Volatile Organics ☐ Dissolved Gases (RSK-175) ☐ Dissolved Oxygen (SM 4500)	,		
☐ Carbon Dioxide (SM 4500) ☐ Ferrous Iron (SM 3500) ☐ Hydrogen Sulfide (Hach)			
Tedlar™ bag(s) free of condensation	🗖		Ø
(Tuin Dlank Lot)
Aqueous: UVOA DVOAh UVOAna2 D100PJ D100PJna2 D125AGB D125AGBh	□ 125AGB p	125PB	
☐ 125PBznna ☐ 250AGB ☐ 250CGB ☐ 250CGBs ☐ 250PB ☐ 250PBn ☐ 500AGB ☐	500AGJ □ 50	0AGJ s	
□ 500PB □ 1AGBna □ 1AGBna □ 1PB □ 1PBna □ □]	
Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve () EnCores® () Terra	Cores® ()		
Air: ☐ Tedlar™ ☐ Canister ☐ Sorbent Tube ☐ PUF ☐ Other Matrix (): ⊔	U.	
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Zi	ploc/Resealable	Bag	00 6
Preservative: \mathbf{b} = buffered, \mathbf{f} = filtered, \mathbf{h} = HCl, \mathbf{n} = HNO ₃ , \mathbf{na} = NaOH, $\mathbf{na_2}$ = Na ₂ S ₂ O ₃ , \mathbf{p} = H ₃ PO ₄ ,	Labeled/Chec	ked by:	80410
$\mathbf{s} = H_2SO_4$, $\mathbf{u} = \text{ultra-pure}$, $\mathbf{znna} = \text{Zn} (CH_3CO_2)_2 + \text{NaOH}$	Revie	wed by:	10271080



Calscience



WORK ORDER NUMBER: 16-08-1070

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Risand Villas

Approved for release on 08/25/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP 8	& AIG GWS /	666267.14.Q3.FW

Work Order Number: 16-08-1070

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4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	9
6	16-07-1070 EPA 8315 Formaldehyde and EPA 8315(M) Hydrazines	10



Work Order Narrative

Work Order: 16-08-1070 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 08/13/16. They were assigned to Work Order 16-08-1070.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.





Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name:

16-08-1070

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers:

08/13/16 10:00

8

Attn: Jeremy Hilliard

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
RD68AGW01S006	16-08-1070-1	08/12/16 10:30	4	Aqueous
RD68BGW01S006	16-08-1070-2	08/12/16 11:30	4	Aqueous



Glossary of Terms and Qualifiers

Work Order: 16-08-1070 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.

- X % Recovery and/or RPD out-of-range.
- Z Analyte presence was not confirmed by second column or GC/MS analysis.
 - Solid Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

11053 (C94730 SS75289-90 16-08-1070

Chain of Custody Record	rd COC Number: CALS08121602	CH2MHILL	8/12/2016 2:04:16 PM Page 1 of 1	
Project Name SSFL Task Order 614 Project: 3Q2 Project Number 666267.14.Q3.FW	Location Santa Susana Field Lab Project: 3Q2016 SA/PCP & AIG GWS 37.14.Q3.FW			
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084			
Turnaround Time 10 Days PO Number 100067103941		SW831 SW83		
Sample ID	Sample Date/Time Type Matrix # Containers Preserv	15		
RD68AGW01S006	12-Aug-16 10:30 N Water			<u> </u>
Formaldehyde	Field Filtered: ☐ 2	4°C		
1,1-рмн, ирмн	Field Filtered: ☐ 2	4°C		
	Total Containers:	4		
RD68BGW01S006	12-Aug-16 11:30 N Water			
Formaldehyde	Field Filtered: 2	4°C		
1,1-ОМН, ИОМН	Field Filtered: ☐ 2	4'C		
	Total Containers:	4		

Approved by Sample by Secial Instructions: Approved by Sample Custody Relinquished by Received by Relinquished by Received by Relinquished by Received Signatures Shipping Details ATTN: Method of Shipment: FedEx Nethod of Shipment: FedEx On Ice: Yes / no Airbill No: Lab Name: Lancaster Laboratories Kay Hower	Signatures Signatures Shipping Details ATTN: Date Method of Shipment: FedEx Sample Custody	MS = Matrix Spike SD = Matrix Spike Duplicate			
Dy County Discrete County Dy County County Dy County	by	Dy Conference Signatuves Date/Time		Special Instructions:	
Dy Complete Constitution Con	by	by	Nethod of Shipment:	ATTN:	CH582 PO: 100067101891
by Sample Custody Airbill No: Lab Name: Lancaster Laboratories Kay Hower Kay Hower	by Sample Custody Airbill No: Airbil	by Sample Custody Airbill No: Lab Name: Lancaster Laboratories Kay Hower Sample Custody and Report C Airbill No: Lab Name: (318) 618-8889	Selly (consor) [2 16		CH614 PO 100067103941
l by Agran Ray Hower (318) 618-8889 (82) Hower Ray Hower	Dy Report C Ray Hower Report C Ray Hower R	by Airbill No: Airbill No: Lab Name: Lancaster Laboratories Kay Hower Report C S S 618-8889 S S S S S S S S S		Sample Custody	
Lab Name: Lancaster Laboratories Kay Hower (318) 618-8889	Lab Name: Lancaster Laboratories Kay Hower Lab Phone: (318) 618-8889	Lab Name: Lancaster Laboratories Kay Hower Lab Phone: (318) 618-8889 Say Hower S		and	Report Conv to
1 873 5 0 1 2 1 1 1 1 Lab Phone: (318) 618-8889	ESTANCE & HAT TO Lab Phone: (318) 618-8889	580000 (318) 618-8889		Kay Hower	Jon Freed
		5/13/16	1888 10 A Charles In		(208) 660-4929
8					

Lancaster Laboratories
Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

158335

Group Number(s): (694) 30

Client: CH2MHILL

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

08/13/2016 10:00

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

No

Sample Date/Times match COC:

Yes

Samples Chilled:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Paperwork Enclosed:

Yes

Total Trip Blank Qty:

0

Samples Intact:

Yes

Air Quality Samples Present:

No

Missing Samples:

No

Extra Samples:
Discrepancy in Container Qty on COC:

No No

Unpacked by Melvin Sanchez (8943) at 10:45 on 08/13/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler # Thermometer ID

Corrected Temp

Therm. Type

ice Type | Ice Present?

Ice Container

Elevated Temp? N

32170023 5.4 IR Wet Y Loose/Bag

Calscience

WORK ORDER NUMBER: 16-08-

SAMPLE RECEIPT CHECKLIST

COOLER ___ OF ___

CLIENT:	DATE: 0	B /	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except sediment/tissue) Thermometer ID: SC2A (CF: 0.0°C); Temperature (w/o CF):°C (w/ CF): □ Sample(s) outside temperature criteria (PM/APM contacted by:) □ Sample(s) outside temperature criteria but received on ice/chilled on same day of sample(s) received at ambient temperature; placed on ice for transport by courier Ambient Temperature: □ Air □ Filter	ling	k □ San	
CUSTODY SEAL: Cooler		cked by: _	
Sample(s) ☐ Present and Intact ☐ Present but Not tatatt ☐ Not Present ☐ Not	/A Chec	cked by: _	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples		No	N/A
□ No analysis requested □ Not relinquished □ No relinquished date □ No relinquished Sampler's name indicated on COC	🗖		
Sample container(s) intact and in good condition Proper containers for analyses requested	🗆	_ _ _	
Sufficient volume/mass or analysis requested	🗖		
□ pH □ Residual Chlorine □ Dissolved Sulfide □ Dissolved Oxygen		. 🗖	
☐ Volatile Organics ☐ Total Metals ☐ Dissolved Metals Container(s) for certain analysis free of headspace			
Tedlar™ bag() free of condensation	🗖		
CONTAINER TYPE: (Trip Blank Lot I			
Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125AGB □ 125AGB □ 125AGBh □ 125PBznna □ 250AGB □ 250CGBs □ 250PB □ 250PBn □ 500AGB □ 500AGB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PBna □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ □ □ 1PBna □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	500AGJ 🗆 5 Dores [®] (00AGJ s 	
Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass, J = Jar, P = Plastic, and Z = Zip Preservative: b = buffered, f = filtered, h = HCl, n = HNO ₃ , na = NaOH, na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ PO ₄ , s = H ₂ SO ₄ , u = ultra-pure, znna = Zn (CH ₃ CO ₂) ₂ + NaOH	lloc/Resealabl Labeled/Che	e Bag	



Subcontractor Analysis Report

Work Order: 16-08-1070 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

Eurofins Lancaster Laboratories - Lancaster,PA NELAP 10276CA
 EPA 8315 - Formaldehyde, EPA 8315(M) - Hydrazines

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Eurofins Calscience, Inc 7440 Lincoln Way Garden Grove CA 92841-1432

Report Date: August 25, 2016

Project: 16-08-1070

Submittal Date: 08/13/2016 Group Number: 1694730 SDG: CSF18 PO Number: 16-08-1070 State of Sample Origin: CA

 Client Sample Description
 (LL) #

 RD68AGW01S006 Water
 8525289

 RD68BGW01S006 Water
 8525290

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/.

Electronic Copy To Eurofins Calscience Attn: Terri Chang Electronic Copy To Eurofins Calscience Attn: Richard Villafania

Respectfully Submitted,

Kay Mour

(510) 672-3979

0b-6875258 OELMON) ESO11

Chain of Custody Record	COC Number: CALS08121602		8/12/2016 2:04:16 PM	Page 1 of 1
Project Name SSFL Location Stask Order 614 Project: 3Q2016 SA/PCP Project Number 666267.14,Q3.FW	Location Santa Susana Field Lab 016 SA/PCP & AIG GWS			
Project Manager Jeremy Hilliard Sample Manager Jamie Beckett	(530) 570-5084			
Turnaround Time 10 Days				
	Sample Date/Time Type Matrix # Containers Preserv	3315A 78315 ≥a S		
RD68AGW01S006 12-Aug-16	g-16 10:30 N Water			
Formaldehyde	Field Filtered: 2 4	4'C		
1,1-DМН, UDМН	Field Filtered: 2 4	4°C		
	Total Containers:	4		
RD68BGW01S006 12-Aug-16	g-16 11:30 N Water			
Formaldehyde	Field Filtered: 2 4	4°C		
1,1-DMH, UDMH	Field Filtered: 2 4	4°C		
	Total Containers:	4		

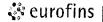
SD = Matrix Spike Duplicate			
Signatures Date/Time	Shipping Details		Special Instructions:
10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
000000000000000000000000000000000000000	SIZILE COS ON ICE: (Yes / no	Sample Custody	CH614 PO 100067103941
	Airbill No:	and	
	Lab Name: Lancaster Laboratories	Kav Hower	report copy to
18000 8-10 TW	(318) 618-8889		(208) 660-4929
7			

MS = Matrix Spike

Approved by Sampled by Received by Relinquished by Received by

Relinquished by





Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Page 16 of 17
Doc Log ID: 158335

Group Number(s): 4730

Client: CH2MHILL

Delivery and Receipt Information

Delivery Method:

Fed Ex

Arrival Timestamp:

08/13/2016 10:00

Number of Packages:

1

Number of Projects:

1

Arrival Condition Summary

Shipping Container Sealed:

Yes

Sample IDs on COC match Containers:

Yes

Custody Seal Present:

No

Sample Date/Times match COC:

Yes

Samples Chilled:

Yes

VOA Vial Headspace ≥ 6mm:

N/A

Paperwork Enclosed:

Yes

Total Trip Blank Qty:

0

Samples Intact:

Yes

No

Air Quality Samples Present:

No

Missing Samples:

No

Extra Samples:

...

Discrepancy in Container Qty on COC:

No

Unpacked by Melvin Sanchez (8943) at 10:45 on 08/13/2016

Samples Chilled Details

Thermometer Types:

DT = Digital (Temp. Bottle)

IR = Infrared (Surface Temp)

All Temperatures in °C.

Cooler#

Thermometer ID 32170023

Corrected Temp 5.4 Therm. Type IR

Ice Type Ic

Ice Present?

Ice Container
Loose/Bag

Elevated Temp?

Ν

Lancaster Laboratories
Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basisResults printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

B - Analyte detected in the blank

C - Result confirmed by reanalysis

E - Concentration exceeds the calibration range

J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)

P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.

U - Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





Calscience



WORK ORDER NUMBER: 16-09-0740

The difference is service



AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: CH2M HILL

Client Project Name: 3Q2016 SA/PCP & AIG GWS /

666267.14.Q3.FW

Attention: Jeremy Hilliard

4121 Carmichael Rd

Montgomery, AL 36106-2801

Ridard Villas

Approved for release on 09/12/2016 by:

Richard Villafania Project Manager

ResultLink >

Email your PM >

Eurofins Calscience, Inc. (Calscience) certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, if any, is attached to this report. The results in this report are limited to the sample(s) tested and any reproduction thereof must be made in its entirety. The client or recipient of this report is specifically prohibited from making material changes to said report and, to the extent that such changes are made, Calscience is not responsible, legally or otherwise. The client or recipient agrees to indemnify Calscience for any defense to any litigation which may arise.



Contents

Client Project Name:	3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW
Work Order Number:	16-09-0740

1	Work Order Narrative	3
2	Sample Summary	4
3	Glossary of Terms and Qualifiers	5
4	Chain-of-Custody/Sample Receipt Form	6
5	Subcontract Narrative	10
6	16-09-0740 Radiologicals	11



Work Order Narrative

Work Order: 16-09-0740 Page 1 of 1

Condition Upon Receipt:

Samples were received under Chain-of-Custody (COC) on 08/13/16. They were assigned to Work Order 16-09-0740.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times:

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control:

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Subcontractor Information:

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Additional Comments:

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.



Sample Summary

Client: CH2M HILL

4121 Carmichael Rd

Montgomery, AL 36106-2801

Work Order: Project Name: 16-09-0740

3Q2016 SA/PCP & AIG GWS / 666267.14.Q3.FW

PO Number:

Date/Time

Received:

Number of Containers: 08/13/16 08:30

2

Attn: Jamie Beckett

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
SP29BGW01D003	16-09-0740-1	08/12/16 09:30	1	Solid
SP29BGW01S003	16-09-0740-2	08/12/16 09:30	1	Solid





SG

Χ

Glossary of Terms and Qualifiers

Work Order: 16-09-0740 Page 1 of 1

Qualifiers	<u>Definition</u>
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
В	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
CI	See case narrative.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.

% Recovery and/or RPD out-of-range. Ζ Analyte presence was not confirmed by second column or GC/MS analysis.

The sample extract was subjected to Silica Gel treatment prior to analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

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Chain of Custody Record COC Numi	C Number: CALS08121603	Ï		8/12/2016 2:05:10 PM	05:10 PM	Page 1 of 2			
Location 016 SA/PC	Santa Susana Field Lab .p & AIG GWS								
Project Number 666267.14.Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 57	(530) 570-5084					5			
Turnaround Time 10 Days PO Number 100067103941		E900	E906 E901. E901	HASL3			Sec. 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		*
Sample ID Sample Date/Time	Sample Date/Time Type Matrix # Containers	Preserv	. C					engalawa andersonana	
SP29BGW01D003 12-Aug-16 9:3	9:30 N Water		1						
Gamma Spec, tot - same as 160-13607-1	Field Filtered: 1	HN03, 4'C							
Gamma Spec, diss - same as 160-13607-1	Field Filtered: 🗸	HNO3, 4'C	<u> </u>						
Gross Alpha/Beta, Gross Alpha/Beta-decanted	Field Filtered: 1	HNO3, 4'C							
Isotopic uranium	Field Filtered:	HN03, 4'C							
Sr-89/90	Field Filtered:	HN03, 4°C	<u>S</u>						
Total on	Field Filtered:[2	40							
	Total Containers:	7				And the state of t			

Special Instructions:	CH582 PO: 100067101891	148601 100001 10101	Donot to	Jon Freed	(208) 660-4929
	AIIN:	Sample Custody	and	Mike Franks	
Shipping Details	Method of Shipment: FedEx	On Ice: yes / no	Airbill No:	Lab Name: Test America - St. Louis	Lab Phone: (314) 298-8566
Signatures Cate/Time	Now Now Now Now Now Now Now Now Now Now	10 1/2/2 / 2/2/2/2/2/2/2/2/2/2/2/2/2/2/2/2	1001 8 134 CR30 Airb	description of the control of the co	Administration (American Control of Control

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Received by

Received by

Relinquished by Sampled by

Approved by

MS = Matrix Spike SD = Matrix Spike Duplicate

Page 2 of 2

CH2NHIL 8/12/2016 2:05:10 PM

COC Number: CALS08121603

Chain of Custody Record

Project Name SSFL Location Santa Susana Field Lab Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS	anta Susana Field Lab & AIG GWS	
Project Number 654377.82.LB Project Manager Jeremy Hilliard		
Sample Manager Jamie Beckett (530) 570-5084	7-5084	
Turnaround Time 10 Days PO Number 100067103941		E90 E903
Sample ID Sample Date/Time	Type Matrix #Containers Preserv	06.0 05.0 1.1F 01.1
SP29BGW01S003 12-Aug-16 9:30) N Water	
-13607-1	Field Filtered: 1 HN03, 4°C	
i L	Field Filtered: 1 HN03, 4°C	
Gross Alpha/Beta, Gross Alpha/Beta-decanted	Field Filtered: 1 HN03, 4°C	
Isotopic uranium	Field Filtered: 1 HN03, 4'C	
Sr-89/90	Field Filtered: 1 HN03, 4°C	
Tribum	Field Filtered [2 4'C	
	Total Containers: 7	
	et de la company	The state of the s

CH582 PO: 100067101891 CH614 PO 100067103941 Jon Freed (208) 660-4929 Special Instructions: Report Copy to Sample Custody Mike Franks ATTN: and Lab Name: Test America - St. Louis Shipping Details Lab Phone: (314) 298-8566 Method of Shipment: On Ice: yes / no Airbill No: W. E. S. MS = Matrix Spike SD = Matrix Spike Duplicate Relinquished by Relinquished by Received by Approved by Sampled by Received by

Sample Login Acknowledgement

Job 160-18629-1

Client Job Description: Purchase Order #:

NASA SSFL

1000067103941

Work Order #:

Project Manager:

Chenise Y Lambert-Sykes

Job Due Date: Job TAT:

9/13/2016 20 Days

9/13/2016

Max Deliverable Level:

Earliest Deliverable Due:

Bill To:

Report To:

Eurofins Calscience, Inc

Richard Villafania 7440 Lincoln Way

Redding, CA 96001

Mark Fesler

2525 Air Park

Garden Grove, CA 92841

CH2M Hill Constructors, Inc.

Login 160-18629

Sample Receipt:

8/13/2016 8:30:00 AM

Number of Coolers:

FedEx Saturday Delivery Cooler Temperature(s) (C°): 2.5; Method of Delivery: Client Sample ID **Date Sampled** Matrix I ah Samnia #

Lab Sample #	Client Sample ID	Date Sam	pied	IVIALITA		
Method	Method Description / Work Location				Rpt Basis	Dry / Wet **
160-18629-1	SP29BGW01D003	8/12/2016	9:30:00 AM	Water		
900.0	Gross Alpha/Beta (GFPC) - decanted / In-	-Lab			Total	Wet
900.0	Gross Alpha/Beta (GFPC) / In-Lab				Total	Wet
901.1_Cs	Cesium 137 & Other Gamma Emitters (G	S) / In-Lab			Dissolved	Wet
901.1_Cs	Cesium 137 & Other Gamma Emitters (G	S) / In-Lab			Total	Wet
905_TSR	Strontium-89/90 (GFPC) / In-Lab				Total	Wet
906.0	Tritium (LSC) / In-Lab				Total	Wet
A01R_U	Isotopic Uranium (Alpha Spectrometry) / I	n-Lab			Total	Wet
160-18629-2	SP29BGW01S003	8/12/2016	9:30:00 AM	Water		
900.0	Gross Alpha/Beta (GFPC) - decanted / In-	-Lab			Total	Wet
900.0	Gross Alpha/Beta (GFPC) / In-Lab				Total	Wet
901.1_Cs	Cesium 137 & Other Gamma Emitters (G	S) / In-Lab			Dissolved	Wet
901.1_Cs	Cesium 137 & Other Gamma Emitters (G	S) / In-Lab			Total	Wet
905_TSR	Strontium-89/90 (GFPC) / In-Lab				Total	Wet
906.0	Tritium (LSC) / In-Lab				Total	Wet
A01R_U	Isotopic Uranium (Alpha Spectrometry) / I	n-Lab			Total	Wet



Calscience

WORK ORDER NUMBER: 16-09- 0740

SAMPLE RECEIPT CHECKLIST

COOLER ____ OF ___

CLIENT: CHAMHILL		DA	TE: 09	/	/ 2016
TEMPERATURE: (Criteria: 0.0°C – 6.0°C, not frozen except set Thermometer ID: SC2A (CF: 0.0°C); Temperature (w/o CF): □ Sample(s) outside temperature criteria (PM/APM contacte □ Sample(s) outside temperature criteria but received on ice □ Sample(s) received at ambient temperature; placed on ice for Ambient Temperature: □ Air □ Filter	°C (w/ CF): d by:) /chilled on same day o			□ Sam	
CUSTODY SEAL: Cooler ☐ Present and Intact ☐ Present but Not Intact Sample(s) ☐ Present and Intact ☐ Present but Not Intact		□ N/A □ N/A		ed by: _ ed by: _	
SAMPLE CONDITION: Chain-of-Custody (COC) document(s) received with samples COC document(s) received complete □ Sampling date □ Sampling time □ Matrix □ Number of			Yes	No	N/A
□ No analysis requested □ Not relinquished □ No	ished date 🚨 No relin		🗆		
Samples received within holding time Aqueous samples for certain analyses received within 15-min ph □ Residual Chlorine □ Dissolved Sunde □ Dissolved Proper preservation chemical(s) noted on CO2 and/or sample of	ved Oxygen		🛚	_ _	_ _
Unpreserved aqueous sample(s) received for certain analyse □ Volatile Organics □ Total Metals □ Dissolved Metals Container(s) for certain analysis free of headspace	solved Oxygen (SM 45	00)	🗆		
Tedlar™ bag(s) free of condensation					
CONTAINER TYPE: Aqueous: □ VOA □ VOAh □ VOAna₂ □ 100PJ □ 100PJna₂ □ 125PBznna □ 250AGB □ 250CGB □ 250CGBs □ 250PB □ 500PB □ 1AGB □ 1AGBna₂ □ 1AGBs □ 1PB □ 1PBna Solid: □ 4ozCGJ □ 8ozCGJ □ 16ozCGJ □ Sleeve () □ Air: □ Tedlar™ □ Canister □ Sorbent Tube □ PUF □ Container: A = Amber, B = Bottle, C = Clear, E = Envelope, G = Glass Preservative: b = buffered, f = filtered, h = HCl, n = HNO₃, na = NaOH s = H₂SO₄, u = ultra-pure, znna = Zn (CH₃CO₂)₂ + NaOH	2 □ 125AGB □ 125AG □ 250PBn □ 500AG □ □ □ □ □ □ □ □ □ Other Matrix (, J = Jar, P = Plastic, and , na ₂ = Na ₂ S ₂ O ₃ , p = H ₃ P	B □ 500AG □ □ □ TerraCores ^o Z = Ziploc/Re	AGBp GJ GJ GSJ GSS GSS GSS GSS GSS GSS GSS GSS GSS GS	125PB)AGJs J	



Subcontractor Analysis Report

Work Order: 16-09-0740 Page 1 of 1

One or more samples in this work order have tests that were subcontracted. The subcontract report(s) follows.

For subcontracted tests, please reference the laboratory information noted below.

TestAmerica - Earth City,MO
 Radiochemistry





THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis 13715 Rider Trail North Earth City, MO 63045 Tel: (314)298-8566

TestAmerica Job ID: 160-18629-1 Client Project/Site: NASA SSFL

For:

CH2M Hill Constructors, Inc. 2525 Air Park Redding, California 96001

Attn: Mark Fesler

Gent Piterin

Authorized for release by: 9/12/2016 3:54:35 PM

Chenise Lambert-Sykes, Project Manager I (314)298-8566 chenise.lambert-sykes@testamericainc.com

.....LINKS

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Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: CH2M Hill Constructors, Inc.

Project/Site: NASA SSFL

TestAmerica Job ID: 160-18629-1

Job ID: 160-18629-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

Client: CH2M Hill Constructors, Inc.

Project: NASA SSFL

Report Number: 160-18629-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica St. Louis attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results for Chemistry analyses are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header. All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client."

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 08/13/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.5 C.

Receipt Exceptions

The following sample was received with insufficient preservation: SP29BGW01D003 (160-18629-1). Nitric acid preservative was added by the laboratory for the bottle marked 901.1 Filtered, and the pH was adjusted to < 2 SU.

The following sample was received with insufficient preservation: SP29BGW01S003 (160-18629-2). Nitric acid preservative was added by the laboratory to the following bottles: 901.1, 905.0, and 901.1 Filtered, and the pH was adjusted to < 2 SU.

GROSS ALPHA AND GROSS BETA RADIOACTIVITY

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Gross Alpha and Gross Beta Radioactivity in accordance with USEPA Method 900.0. The samples were prepared on 08/31/2016 and analyzed on 09/03/2016.

Prep Batch: 267451

The gross alpha detection goal (3.00 pCi/L) was not met for the following samples due to a reduction of the sample size attributed to high

3

3

TestAmerica Job ID: 160-18629-1

Client: CH2M Hill Constructors, Inc.

Project/Site: NASA SSFL

Job ID: 160-18629-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

residual mass: SP29BGW01D003 (160-18629-1), SP29BGW01S003 (160-18629-2), (160-18561-B-1-A) and (160-18561-B-1-G DU). In addition, samples 280-86797-B-1-A and 160-18855-B-1-A did not meet the beta detection goal (4.00 pCi/L). Analytical results are reported with the detection limit achieved.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GAMMA SPECTROSCOPY (CESIUM)-DISSOLVED

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Gamma Spectroscopy (Cesium) -dissolved in accordance with EPA 901.1. The samples were prepared on 08/18/2016 and analyzed on 08/19/2016.

Prep Batch: 265503

The reporting limit for cesium-137 (20.0 pCi/L) was not met. This is caused by the elevated Compton background due to elevated activity of radium-226 daughters (lead-214, bismuth-214). The data is reported with the MDC achieved. SP29BGW01S003 (160-18629-2) and (160-18629-E-1-B DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

CESIUM 137 AND OTHER GAMMA EMITTERS (GS)

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Cesium 137 and Other Gamma Emitters (GS) in accordance with USEPA Method 901.1. The samples were prepared and analyzed on 08/18/2016.

Prep Batch: 265505

The reporting limit for cesium-137 (20.0 pCi/L) was not met. This is caused by the elevated Compton background due to elevated activity of radium-226 daughters (lead-214, bismuth-214). The data is reported with the MDC achieved. SP29BGW01S003 (160-18629-2) and (160-18629-B-1-B DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

STRONTIUM-90 (GFPC)

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Strontium-90 (GFPC) in accordance with EPA Method 905. The samples were prepared on 09/09/2016 and analyzed on 09/10/2016.

Prep Batch: 268964

Insufficient sample volume was available to perform a sample duplicate (DUP) associated with analytical batch 160-268964. A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision: SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

TRITIUM, TOTAL (LSC)

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Tritium, Total (LSC) in accordance with USEPA 906.0. The samples were prepared on 09/07/2016 and analyzed on 09/08/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples SP29BGW01D003 (160-18629-1) and SP29BGW01S003 (160-18629-2) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were prepared on 09/01/2016 and analyzed on 09/08/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

					1	-						
Project Name SSFL Location Santa Susana Field Lab Task Order 614 Project: 3Q2016 SA/PCP & AIG GWS Project Number 666267.14,Q3.FW Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10Days	usana Field Lab I GWS -5084				E9		рин					
	Sample Date/Time Type Matrix # Containers	s Preserv	00.0	1.1F 01.1	05.0	06.0	L300					
SP29BGW01D003 12-Aug-16 9:30	N Water											
Gamma Spec, tot same as 160-13607-1	Field Filtered:	HN03, 4°C	>									Н
Gamma Spec, diss - same as 160-13607-1	Field Filtered:	HN03, 4'C		>								H
Gross Alpha/Beta, Gross Alpha/Beta-decanted	Field Filtered: 1	HN03, 4'C	>									H
Isotopic uranium	Field Filtered:	HN03, 4'C					<u> </u>				H	H
Sr-89/90	Field Filtered:	HNO3, 4'C			>							П
Tritium	Field Filtered: 2	4.C				>						H
	Total Containers:	7										-

MS = Matrix Spike SD = Matrix Spike Duplicate	trix Spike Duplicate			
1	Signatures Date/Time	Shipping Details		Special Instructions:
Approved by		Method of Shipment: FedEx	ATTN:	CH582 PO: 100067101891
Relinquished by	5/2/16/190	3/2/6/10 On Ice: yes / no	Sample Custody	C1614 TO 100067 103941
Received by	Cart 8-13/6 0820 Airbill No:	Airbill No:	and	Report Copy to
Relinquished by		Lab Name: Test America - St. Louis	Mike Franks	Jon Freed
Received by		Lab Fildle. (314) 430-0300		(208) 660-4829

Chain of Custody Record COC Numi	COC Number: CALS08121603	•	CZZ2	15	⊒	80	12/2016 2	CH2NHILL 8/12/2016 2:05:10 PM	Page 2 of 2	of 2	
Project Name SSFL Location Santa Susana Task Order 582 Project: 3Q2016 SA/PCP & AIG GWS Project Number 654377,82.LB Project Manager Jeremy Hilliard Sample Manager Jamie Beckett (530) 570-5084 Turnaround Time 10Days PO Number 100067103941	Location Santa Susana Field Lab		E900,0	E901.1F	E905.0	E906.0	HASL300				
3ample Date/1	adk.	Preserv				1					İ
3F29BGW015003	on in water										
Gamma Spec, tot - same as 160-13607-1	Field Filtered: 1	HN03, 4°C		>							
Gamma Spec, diss - same as 160-13607-1	Field Filtered:	HN03, 4'C		>							
Gross Alpha/Beta, Gross Alpha/Beta-decanted	Field Filtered:	HN03, 4'C	5								
Isotopic uranium	Field Filtered:	HN03, 4'C									
Sr-89/90	Field Filtered: 1	HN03, 4'C			>						
Tritium	Field Filtered: 2	4.C				5					
	Total Containers:	7									



Login Sample Receipt Checklist

Client: CH2M Hill Constructors, Inc. Job Number: 160-18629-1

Login Number: 18629 List Source: TestAmerica St. Louis

List Number: 1 Creator: Clarke, Jill C

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	Refer to Job Narrative for details.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Page 18 of 32

Client: CH2M Hill Constructors, Inc.

Project/Site: NASA SSFL

TestAmerica Job ID: 160-18629-1

Qualifiers

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Definitions/Glossary

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)



RLRPD

PQL

QC

RER

Relative error ratio

Practical Quantitation Limit

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) TEQ Toxicity Equivalent Quotient (Dioxin)

Quality Control

Client: CH2M Hill Constructors, Inc.

Project/Site: NASA SSFL

TestAmerica Job ID: 160-18629-1

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
905.0	Total Beta Strontium (GFPC)	DOE	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL

Method Summary

Protocol References:

DOE = U.S. Department of Energy

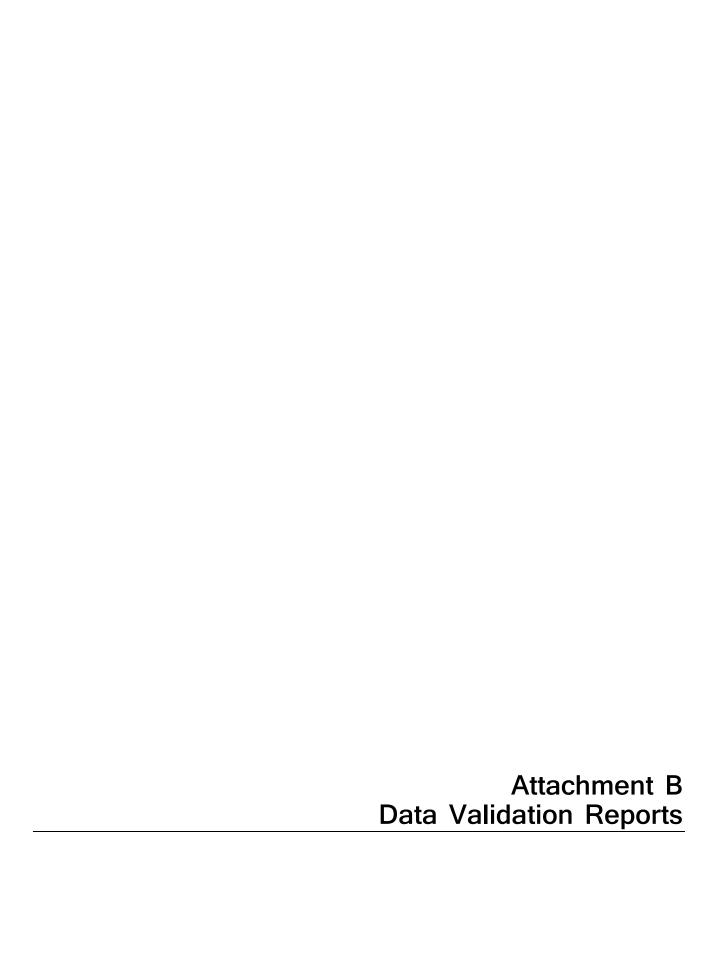
EPA = US Environmental Protection Agency

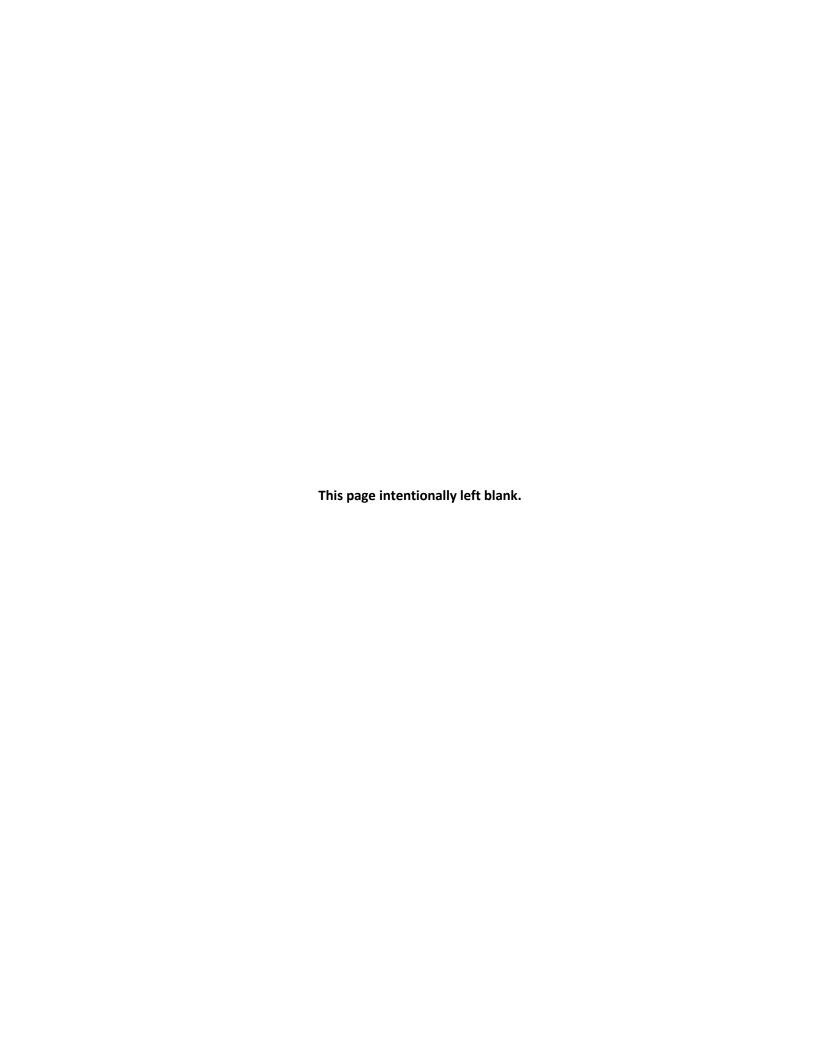
Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566









ATTACHMENT B

Data Validation Reports

Data validation reports presented in this attachment were generated using a Microsoft Access-based validation tool created by CH2M HILL. The reports provide a detailed summary of the data validation findings, as well as the final analytical results for each sample, including any data qualification flags that may have been applied. The qualification flag is followed by an annotated validation reason code for applying the flag. Below is a table that lists the validation reason code, a brief description of the reason code, and the corresponding Santa Susana Field Laboratory (SSFL) qualification code.

ABSRL Ambient blank concentration less than RL F ABSMDL Ambient blank concentration greater than the MDL F ABSRL Ambient blank concentration greater than the MDL F ABSRL Ambient blank concentration greater than the RL F CCCBRRL Continuing calibration blank concentration less than RL B CCCBRRL Continuing calibration blank concentration exceeds RL B CCCVLCL Continuing calibration recovery less than lower control limit C CCCVRF SPCC exceeds RF > 0.300 criteria R CCCVVUCL Continuing calibration recovery greater than upper control limit C CFSRPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EBSRL Equipment blank concentration less than the RL F EBSMDL Equipment blank concentration greater than the MDL F EBSRL Equipment blank concentration greater than the MDL F EBSRL Equipment blank concentration greater than the RL F EBSMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Field blank concentration greater than the RL F EBSRL Fie	Validation Reason Code	Description	SSFL Qualification Code
ABS-MDL Ambient blank concentration greater than the MDL F ABS-RL Ambient blank concentration greater than the RL CCBS-RL Continuing calibration blank concentration less than RL B CCCV-LCL Continuing calibration blank concentration exceeds RL B CCCV-LCL Continuing calibration recovery less than lower control limit CCCV-LCL Continuing calibration recovery less than lower control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration recovery greater than upper control limit CCCV-LCL Continuing calibration exceeded *DVR *DVR EBS-RL Equipment blank concentration greater than the RL F EBS-RL Equipment blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater than the RL F EBS-RL Field blank concentration greater	>ICLinearRange	Result greater than linear calibration range	С
AB>RL Ambient blank concentration greater than the RL CCB+RL Continuing calibration blank concentration less than RL B CCCB+RL Continuing calibration blank concentration exceeds RL B CCCV+LCL Continuing calibration recovery less than lower control limit CCCV+RF SPCC exceeds RF > 0.300 criteria R CCCV+UCL Continuing calibration recovery greater than upper control limit CCCF>RPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB+RL Equipment blank concentration less than the RL F EB+NDL Equipment blank concentration greater than the MDL F EB+RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D FB+RL Field blank concentration less than RL F EB+RL Field blank concentration greater than the RL F FB-RL Field blank concentration greater than the RL F F FD-SRD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H CCRRF Initial calibration relative response factor below LCL R CCGRSD Initial calibration blank concentration less than the RL B CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	AB <rl< td=""><td>Ambient blank concentration less than RL</td><td>F</td></rl<>	Ambient blank concentration less than RL	F
CCB-RL Continuing calibration blank concentration less than RL B CCB-RL Continuing calibration blank concentration exceeds RL B CCV-LCL Continuing calibration recovery less than lower control limit C CCV-RF SPCC exceeds RF > 0.300 criteria R CCV-UCL Continuing calibration recovery greater than upper control limit C CCF-RPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB-RL Equipment blank concentration less than the RL F EB-MDL Equipment blank concentration greater than the MDL F EB-RL Equipment blank concentration greater than the RL F EB-RL Equipment blank concentration greater than the RL F EB-RL Equipment blank concentration greater than the RL F EB-RL Field blank concentration less than RL F EB-RL Field blank concentration less than RL F EB-RL Field blank concentration greater than the RL	AB>MDL	Ambient blank concentration greater than the MDL	F
CCB>RL Continuing calibration blank concentration exceeds RL B CCV <lcl c="" calibration="" ccv<rf="" continuing="" control="" exceeds="" less="" limit="" lower="" recovery="" rf="" spcc="" than=""> 0.300 criteria R CCV>UCL Continuing calibration recovery greater than upper control limit C CF>RPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB<rl blank="" concentration="" eb="" equipment="" f="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EB>RL Equipment blank concentration greater than the RL F EB>RL Equipment blank concentration greater than the RL F EB>RL Equipment blank concentration greater than the RL F EB>RL Field blank concentration less than RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded C CRRF Initial calibration relative response factor below LCL R CC%RSD Initial calibration Blank concentration less than the RL B</rl></lcl>	AB>RL	Ambient blank concentration greater than the RL	F
CCCV <lcl c="" calibration="" cccv<rf="" continuing="" control="" exceeds="" less="" limit="" lower="" recovery="" rf="" spcc="" than=""> 0.300 criteria R CCCV>UCL Continuing calibration recovery greater than upper control limit C CFSRPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB<rl blank="" concentration="" eb="" equipment="" f="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR EB<rl blank="" concentration="" eb="" f="" field="" greater="" rl="" than="" the="">RL Field blank concentration less than RL F EB>RL Field blank concentration less than RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RD FIELD FI</rl></rl></lcl>	CCB <rl< td=""><td>Continuing calibration blank concentration less than RL</td><td>В</td></rl<>	Continuing calibration blank concentration less than RL	В
SPCC exceeds RF > 0.300 criteria CCV>UCL Continuing calibration recovery greater than upper control limit C CFRPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB <rl blank="" concentration="" eb="" equipment="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D FB F EB>RL Field blank concentration less than RL F F FB>RL Field blank concentration greater than the RL F F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration blank concentration less than the RL B</rl>	CCB>RL	Continuing calibration blank concentration exceeds RL	В
CCV>UCL Continuing calibration recovery greater than upper control limit C CF>RPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB Coelution Compounds were reported combined on one column *DVR EB EB Equipment blank concentration less than the RL Equipment blank concentration greater than the MDL F EB F EB EB Equipment blank concentration greater than the RL F EB F EB EB Equipment blank concentration greater than the RL F EB F EB EB Estimated Maximum Possible Concentration *DVR Exclude Data not used; another value is appropriate or data was not requested D EB B EB EB Field blank concentration less than RL F EB F EB FB Field blank concentration greater than the RL F EB F EB FB Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTD>UCL Preparation/extraction holding time exceeded H HTD>UCL Preparation/extraction holding time exceeded C CRF Initial calibration relative response factor below LCL R C%RSD Initial calibration RSD exceeded C CB C CB CB Initial calibration blank concentration less than the RL B B	CCV <lcl< td=""><td>Continuing calibration recovery less than lower control limit</td><td>С</td></lcl<>	Continuing calibration recovery less than lower control limit	С
CF>RPD Confirmation Precision Exceeded *DVR Coelution Compounds were reported combined on one column *DVR EB <rl blank="" concentration="" eb="" equipment="" f="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D EB<rl blank="" concentration="" eb="" f="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F EB>RL Field blank concentration greater than the RL F ED>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R CCRSD Initial calibration Blank concentration less than the RL B</rl></rl>	CCV <rf< td=""><td>SPCC exceeds RF > 0.300 criteria</td><td>R</td></rf<>	SPCC exceeds RF > 0.300 criteria	R
Coelution Compounds were reported combined on one column *DVR EB <rl blank="" concentration="" eb="" equipment="" f="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D EB<rl blank="" concentration="" eb="" f="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F ED>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration Blank concentration less than the RL B</rl></rl>	CCV>UCL	Continuing calibration recovery greater than upper control limit	С
EB <rl blank="" concentration="" eb="" equipment="" f="" less="" rl="" than="" the="">MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the MDL F EMPC Estimated Maximum Possible Concentration *DVR Exclude Data not used; another value is appropriate or data was not requested D EB<rl blank="" concentration="" eb="" f="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F ED>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H CCRRF Initial calibration relative response factor below LCL R CCRSD Initial calibration blank concentration less than the RL B</rl></rl>	CF>RPD	Confirmation Precision Exceeded	*DVR
EB>MDL Equipment blank concentration greater than the MDL F EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D FB <rl blank="" concentration="" f="" fb="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTP>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration blank concentration less than the RL B</rl>	Coelution	Compounds were reported combined on one column	*DVR
EB>RL Equipment blank concentration greater than the RL F EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D FB <rl blank="" concentration="" f="" fb="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration blank concentration less than the RL B</rl>	EB <rl< td=""><td>Equipment blank concentration less than the RL</td><td>F</td></rl<>	Equipment blank concentration less than the RL	F
EMPC Estimated Maximum Possible Concentration *DVR exclude Data not used; another value is appropriate or data was not requested D FB <rl blank="" concentration="" f="" fb="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration blank concentration less than the RL B</rl>	EB>MDL	Equipment blank concentration greater than the MDL	F
Data not used; another value is appropriate or data was not requested FB <rl blank="" concentration="" f="" fb="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration blank concentration less than the RL B</rl>	EB>RL	Equipment blank concentration greater than the RL	F
FB <rl blank="" concentration="" f="" fb="" field="" less="" rl="" than="">RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration BSD exceeded C CB<rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>ЕМРС</td><td>Estimated Maximum Possible Concentration</td><td>*DVR</td></rl></rl>	ЕМРС	Estimated Maximum Possible Concentration	*DVR
FB>RL Field blank concentration greater than the RL F FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R CCRSD Initial calibration BSD exceeded C CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>exclude</td><td>Data not used; another value is appropriate or data was not requested</td><td>D</td></rl>	exclude	Data not used; another value is appropriate or data was not requested	D
FD>RPD Field duplicate exceeds RPD criteria *DVR HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R CCMRSD Initial calibration RSD exceeded C CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>FB<rl< td=""><td>Field blank concentration less than RL</td><td>F</td></rl<></td></rl>	FB <rl< td=""><td>Field blank concentration less than RL</td><td>F</td></rl<>	Field blank concentration less than RL	F
HTa>UCL Analysis holding time exceeded H HTp>UCL Preparation/extraction holding time exceeded H C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration RSD exceeded C CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>FB>RL</td><td>Field blank concentration greater than the RL</td><td>F</td></rl>	FB>RL	Field blank concentration greater than the RL	F
HTp>UCL Preparation/extraction holding time exceeded H IC RRF Initial calibration relative response factor below LCL R Initial calibration RSD exceeded C Initial calibration blank concentration less than the RL B	FD>RPD	Field duplicate exceeds RPD criteria	*DVR
C RRF Initial calibration relative response factor below LCL R C%RSD Initial calibration RSD exceeded C CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>HTa>UCL</td><td>Analysis holding time exceeded</td><td>Н</td></rl>	HTa>UCL	Analysis holding time exceeded	Н
C%RSD Initial calibration RSD exceeded C CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>HTp>UCL</td><td>Preparation/extraction holding time exceeded</td><td>Н</td></rl>	HTp>UCL	Preparation/extraction holding time exceeded	Н
CB <rl b<="" blank="" calibration="" concentration="" initial="" less="" rl="" td="" than="" the=""><td>IC RRF</td><td>Initial calibration relative response factor below LCL</td><td>R</td></rl>	IC RRF	Initial calibration relative response factor below LCL	R
	IC%RSD	Initial calibration RSD exceeded	С
CVS <lcl c<="" control="" less="" limit="" lower="" recovery="" second="" source="" std.="" td="" than="" verification=""><td>ICB<rl< td=""><td>Initial calibration blank concentration less than the RL</td><td>В</td></rl<></td></lcl>	ICB <rl< td=""><td>Initial calibration blank concentration less than the RL</td><td>В</td></rl<>	Initial calibration blank concentration less than the RL	В
	ICVS <lcl< td=""><td>Second source verification std. recovery less than lower control limit</td><td>С</td></lcl<>	Second source verification std. recovery less than lower control limit	С

ENI019161108MGM B-

Validation Reason Code	Description	SSFL Qualification Code
ICVS>UCL	Second source verification std. recovery greater than upper control limit	С
ImproperPres	Sample improperly preserved or handled prior to analysis	*DVR
InvalidLabFlag	Remove lab UN Flag	(No flag)
IS <lcl< td=""><td>Internal standard response less than lower control limit</td><td>1</td></lcl<>	Internal standard response less than lower control limit	1
IS>UCL	Internal standard response greater than upper control limit	1
Lab Dup RPD	Lab duplicate exceeds RPD criteria	Е
LB <rl< td=""><td>Laboratory blank contamination less than the RL</td><td>В</td></rl<>	Laboratory blank contamination less than the RL	В
LB>MDL	Laboratory blank contamination greater than the MDL	В
LB>RL	Laboratory blank contamination greater than the RL	В
LCS <lcl< td=""><td>LCS recovery less than lower control limit</td><td>L</td></lcl<>	LCS recovery less than lower control limit	L
LCS>UCL	LCS recovery greater than upper control limit	L
LCSRPD	LCSD RPD criteria exceeded	L
MS <lcl< td=""><td>Matrix spike recovery less than lower limit</td><td>Q</td></lcl<>	Matrix spike recovery less than lower limit	Q
MS>UCL	Matrix spike recovery greater than upper limit	Q
MSRPD	Matrix spike RPD criteria exceedance	Q
NoLCS	No LCS in the analytical batch	L
PostSpike <lcl< td=""><td>Post spike recovery less than the lower control limit</td><td>P</td></lcl<>	Post spike recovery less than the lower control limit	P
PostSpike>UCL	Post spike recovery greater than the upper control limit	P
RE	Re-extraction and/or re-analysis	D
RemoveBLabFlag	Lab B flag removed - analyte not detected in sample	\$
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than lower limit</td><td>Q</td></lcl<>	Matrix spike duplicate recovery criteria less than lower limit	Q
SD>UCL	Matrix spike duplicate recovery criteria greater than upper limit	Q
SerlDil>UCL	Serial Dilution %D greater than the upper control limit	А
Sur <lcl< td=""><td>Surrogate recovery less than lower limit</td><td>S</td></lcl<>	Surrogate recovery less than lower limit	S
Sur>UCL	Surrogate recovery greater than upper limit	S
TB <rl< td=""><td>Trip blank concentration less than RL</td><td>Т</td></rl<>	Trip blank concentration less than RL	Т
TB>RL	Trip blank concentration greater than the RL	Т
TEMP>8C	Temperature Blank>8C	*DVR
TIC	Tentatively identified compound	(No flag)

B-2 EN1019161108MGM

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 Method 4500-NH3F

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC			
NativeID	Гуре Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR19GW01S016	N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016	LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016MS	MS	1		
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	Ν	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011MS	MS	1		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates All acceptance criteria were met.

Matrix Spike All MS acceptance criteria were met. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

16G302 4500-NH3F

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5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
AMMONIA-N	0.06	U	U	0.06	0.1	MG/L	
Field ID	ND135GW011	D011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
AMMONIA-N	0.152			0.06	0.1	MG/L	
Field ID	ND135GW018	S011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
AMMONIA-N	0.115			0.06	0.1	MG/L	

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Validated Form I

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 Method E300.0

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC			
Type D	ilution ABLotValue	EBLotValue	TBLotValue
LR	40 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
Ν	40 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
s MS	1		
s MS	40		
) SD	40		
) SD	1		
FD	25 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
FD	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
LR	40 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
N	40 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
S MS	1		
S MS	40		
SD	40		
SD	1		
	LR N N LR S MS S D D D F D LR LR N N S MS S S D S D S D S D S D S D S D S D	Type Dilution ABLotValue LR 40 Missing Association DP N 1 Missing Association DP N 40 Missing Association DP LR 1 Missing Association DP S MS 1 S MS 40 D SD 40 D SD 1 FD 25 Missing Association DP FD 1 Missing Association DP LR 1 Missing Association DP LR 1 Missing Association DP LR 40 Missing Association DP N 1 Missing Association DP N 40 Missing Association DP	Type Dilution ABLotValue LR 40 Missing Association DP N 1 Missing Association DP N 40 Missing Association DP

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates All acceptance criteria were met.

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass

7. Internal Standard

N/A

Calibration

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding TimeAll acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
CHLORIDE	91.6			4	8	MG/L	
FLUORIDE	0.425	J	J	0.05	0.5	MG/L	
NITRATE-N	0.337	J	J	0.05	0.5	MG/L	
NITRITE-N	0.05	U	U	0.05	0.1	MG/L	
SULFATE	139			10	20	MG/L	
Field ID	ND135GW011	D011					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
CHLORIDE	85.1			2.5	5	MG/L	
FLUORIDE	0.164	J	J	0.05	0.5	MG/L	
NITRATE-N	0.0652	J	J	0.05	0.5	MG/L	
NITRITE-N	0.05	U	U	0.05	0.1	MG/L	
SULFATE	109			6.25	12.5	MG/L	
Field ID	ND135GW01	S011					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
<u> </u>							validationineason (Flag
CHLORIDE	89.8		_	4	8	MG/L	
FLUORIDE	0.176	J	J	0.05	0.5	MG/L	
NITRATE-N	0.0681	J	J	0.05	0.5	MG/L	
NITRITE-N	0.05	U	U	0.05	0.1	MG/L	
SULFATE	114			10	20	MG/L	

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Validated Form I

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 **Method** SW8015B

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type I	Dilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2459Q001	ТВ	1		26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016	Ν	1.1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016	Ν	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016MS	s MS	1.18		
HAR19GW01S016MS	s MS	1		
HAR19GW01S016SD) SD	1.22		
HAR19GW01S016SD) SD	1		
ND135GW01D011	FD	1.05 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	Ν	1.11 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	Ν	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011MS	S MS	1.1		
ND135GW01S011MS	S MS	1		
ND135GW01S011SD	SD	1.08		
ND135GW01S011SD	SD	1		

1. Case Narrative Items of Interest

The following items were noted: TB<RL

2. Blank Summary

Field Blanks These analytes had Blank detects: GASOLINE RANGE ORGANICS (C5-C12) (TB).

Method Blanks No Method Blank detects were found.

Blank Typ	oe Blank ID	<u>Analyte</u>	Result	ReportLimit LabFlag	<u>Units</u>	SDG
TB	CAQW2459Q001	GASOLINE RANGE OR	0.012	0.05 J	MG/L	16G302

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

16G302 SW8015B

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Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass **Calibration**

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Blanks: These analytes had Blank detects: GASOLINE RANGE ORGANICS (C5-C12) (TB).

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Package was complete for level V validation **Data Package Completeness**

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	U A D 10 C W 0 1	5017					
1 1010 15	HAR19GW01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
DIESEL RANGE ORGANICS (C12-C14	0.52	U	U	0.055	0.52	MG/L	
DIESEL RANGE ORGANICS (C15-C20	0.52	U	U	0.055	0.52	MG/L	
DIESEL RANGE ORGANICS (C21-C30	0.52	U	U	0.055	0.52	MG/L	
DIESEL RANGE ORGANICS (C8-C11)	0.52	U	U	0.055	0.52	MG/L	
DIESEL RANGE ORGANICS (C8-C30)	0.52	U	J	0.055	0.52	MG/L	<rl (u)<="" td=""></rl>
ASOLINE RANGE ORGANICS (C5-C1	0.05	U	J	0.01	0.05	MG/L	TB <rl (u)<="" td=""></rl>
Field ID	ND135GW01	0011					
	ND133G WUL	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
DIESEL RANGE ORGANICS (C12-C14	0.49	U	U	0.052	0.49	MG/L	
DIESEL RANGE ORGANICS (C15-C20	0.41	J	J	0.052	0.49	MG/L	
DIESEL RANGE ORGANICS (C21-C30	0.077	J	J	0.052	0.49	MG/L	
DIESEL RANGE ORGANICS (C8-C11)	0.17	J	J	0.052	0.49	MG/L	
DIESEL RANGE ORGANICS (C8-C30)	0.56			0.052	0.49	MG/L	
ASOLINE RANGE ORGANICS (C5-C1	0.075			0.01	0.05	MG/L	TB>MDL (None)
Field ID	ND135GW01	S011					
	1101330 1101	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
DIESEL RANGE ORGANICS (C12-C14	0.52	U	U	0.056	0.52	MG/L	
DIESEL RANGE ORGANICS (C15-C20	0.37	J	J	0.056	0.52	MG/L	
DIESEL RANGE ORGANICS (C21-C30	0.11	J	J	0.056	0.52	MG/L	
DIESEL RANGE ORGANICS (C8-C11)	0.14	J	J	0.056	0.52	MG/L	
DIESEL RANGE ORGANICS (C8-C30)	0.54			0.056	0.52	MG/L	
ASOLINE RANGE ORGANICS (C5-C1	0.071			0.01	0.05	MG/L	TB>MDL (None)

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
TB <rl< td=""><td>Trip blank concentration less than the reporting limit</td><td>Blank</td></rl<>	Trip blank concentration less than the reporting limit	Blank
<rl< td=""><td>Result less than the reporting limit</td><td>RL</td></rl<>	Result less than the reporting limit	RL

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 Method SW8260B

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 10/7/2016_____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC					
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue		
WATER						
CAQW2459Q001	ТВ	1		26071602 / CAQW2459Q001 / 16G302		
HAR19GW01S016	N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
HAR19GW01S016MS	MS	1				
HAR19GW01S016SD	SD	1				
ND135GW01D011	FD	25 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01S011MS	MS	1				
ND135GW01S011	N	25 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01S011	N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01S011SD	SD	1				

1. Case Narrative Items of Interest

The following items were noted: 2Cleve; FD>RPD; LCS<LCL; MS<LCL; MS>UCL; MSRPD; SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks These analytes had Method Blank detects: METHYLENE CHLORIDE. No flagging applied.

Blank Typ	e <u>Blank ID</u>	<u>Analyte</u>	Result	ReportLimit	<u>LabFlag</u>	<u>Units</u>	<u>SDG</u>
LB	MBLK3W	METHYLENE CHLORID	0.58	1	J	UG/L	16G302

3. Spikes and Duplicates

Field Duplicates These samples were out of control: TOLUENE (ND135GW01S011, Difference > RL X 2: 2.5 vs 2).

Matrix Sample ID	Analyte	Result	Field Duplicate Qualifier*	Criteria
WATER	<u>TOLUENE</u>			
ND135GW	01D011	4.1 UG/L	J	FD>RPD
ND135GW	01S011	6.6 UG/L	J	FD>RPD

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Laboratory Duplicates None in this SDG

Matrix Spike

These MS's were out of control: 2-CHLOROETHYL VINYL ETHER (MS - $\,$

HAR19GW01S016MS), 2-CHLOROETHYL VINYL ETHER (MS-

 $ND135GW01S011MS),\ CIS-1,2-DICHLOROETHENE\ (MS-ND135GW01S011MS),$

ND135GW01S011MS), VINYL CHLORIDE (MS - ND135GW01S011MS). These SD's were out of control: 2-CHLOROETHYL VINYL ETHER (SD - HAR19GW01S016SD), 2-

CHLOROETHYL VINYL ETHER (SD - ND135GW01S011SD), CIS-1,2-

DICHLOROETHENE (SD - ND135GW01S011SD), TRICHLOROETHENE (SD - ND135GW01S011SD), VINYL CHLORIDE (SD - ND135GW01S011SD). For cis-1,2-DCE, TCE, and vinyl chloride, the native sample concentrations were greater than 4 times the spike level; no flagging applied to these analytes. Recovery for 2-choroethylvinyl ether

was less than 10%; results were rejected. These MS/SD RPD's were out of control: ISOBUTANOL (ND135GW01S011), ISOPROPANOL (HAR19GW01S016).

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>2-CH</u>	LOROETHY	L VINYL ETHER		
	HAR19GW01S	S016		1 UG/L	R	MS <lcl< td=""></lcl<>
	HAR19GW01S	8016		1 UG/L	R	SD <lcl< td=""></lcl<>
	ND135GW01S	011		1 UG/L	R	MS <lcl< td=""></lcl<>
	ND135GW01S	011		1 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>CIS-1</u>	,2-DICHLOF	<u>ROETHENE</u>		
	ND135GW01S	011		570 UG/L	None	MS <lcl< td=""></lcl<>
	ND135GW01S	011		570 UG/L	None	SD <lcl< td=""></lcl<>
WATER		<u>ISOB</u>	<u>UTANOL</u>			
	ND135GW01S	011		20 UG/L	none	MSRPD
WATER		ISOP	ROPANOL			
	HAR19GW01S	8016		61 UG/L	J	MS>UCL
	HAR19GW01S	8016		61 UG/L	J	MSRPD
WATER		TRIC	HLOROETH	<u>IENE</u>		
	ND135GW01S	011		220 UG/L	None	MS>UCL
	ND135GW01S	011		220 UG/L	None	SD>UCL
WATER		VINY	L CHLORID	<u>E</u>		
	ND135GW01S	011		48 UG/L	None	MS <lcl< td=""></lcl<>
	ND135GW01S	011		48 UG/L	None	SD <lcl< td=""></lcl<>

4. Laboratory Control Sample

These LCS analytes were out of control: 2-HEXANONE (BD), ACROLEIN (BS). All acceptance criteria were met.

<u>Matrix</u>	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BD	LCD3W	2-HEXANONE	121	70	120
WATER	BS	LCS1W	ACROLEIN	69	70	120

5. Surrogates

All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

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8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding TimeAll acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: These samples were out of control: TOLUENE (ND135GW01S011, Difference > RL X 2: 2.5 vs 2).

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude: ND135GW01D011, ND135GW01S011.

Method Blanks: These analytes had Method Blank detects: METHYLENE CHLORIDE. Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Matrix Spike: These MS's were out of control: 2-CHLOROETHYL VINYL ETHER (MS -

HAR19GW01S016MS), 2-CHLOROETHYL VINYL ETHER (MS - ND135GW01S011MS), CIS-1,2-

DICHLOROETHENE (MS - ND135GW01S011MS), ISOPROPANOL (MS -

HAR19GW01S016MS), TRICHLOROETHENE (MS - ND135GW01S011MS), VINYL CHLORIDE (MS - ND135GW01S011MS). These SD's were out of control: 2-CHLOROETHYL VINYL ETHER (SD - HAR19GW01S016SD), 2-CHLOROETHYL VINYL ETHER (SD - ND135GW01S011SD), CIS-1,2-DICHLOROETHENE (SD - ND135GW01S011SD), TRICHLOROETHENE (SD - ND135GW01S011SD), VINYL CHLORIDE (SD - ND135GW01S011SD). These MS/SD RPD's were out of control: ISOBUTANOL (ND135GW01S011), ISOPROPANOL (HAR19GW01S016). VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

ND135GW01D011, ND135GW01S011. Samples were re-analyzed on a diluted basis due to

concentration of target analytes.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-TETRACHLOROETHANE	0.2	U	U	0.2	1	UG/L	-
1,1,1-TRICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
1,1,2,2-TETRACHLOROETHANE	0.2	U	U	0.2	1	UG/L	
-TRICHLORO-1,2,2-TRIFLUOROETH	0.3	U	U	0.3	1	UG/L	
1,1,2-TRICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
1,1-DICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
1,1-DICHLOROETHENE	0.2	U	U	0.2	1	UG/L	
1,1-DICHLOROPROPENE	0.2	U	U	0.2	1	UG/L	
1,2,3-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
1,2,3-TRICHLOROPROPANE	0.5	U	U	0.5	2	UG/L	
1,2,4-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
1,2,4-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
1,2-DICHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
1,2-DICHLOROETHANE	0.2	U	U	0.2	0.5	UG/L	
1,2-DICHLOROPROPANE	0.2	U	U	0.2	1	UG/L	
1,3,5-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
1,3-DICHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
1,3-DICHLOROPROPANE	0.2	U	U	0.2	2	UG/L	
1,4-DICHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
2,2-DICHLOROPROPANE	0.2	U	U	0.2	1	UG/L	
-CHLORO-1,1,1-TRIFLUOROETHAN	0.2	U	U	0.2	1	UG/L	
2-CHLOROETHYL VINYL ETHER	1	R	U	1	2	UG/L	2Cleve (R)
	1	R	U	1	2	UG/L	MS <lcl (r)<="" td=""></lcl>
	1	R	U	1	2	UG/L	SD <lcl (r)<="" td=""></lcl>
2-CHLOROTOLUENE	0.2	U	U	0.2	1	UG/L	
2-HEXANONE	5	U	U	5	10	UG/L	
4-CHLOROTOLUENE	0.2	U	U	0.2	1	UG/L	
ACETONE	5	U	U	5	10	UG/L	
ACETONITRILE	10	U	U	10	20	UG/L	
ACROLEIN	5	UJ	U	5	20	UG/L	LCS <lcl (uj)<="" td=""></lcl>
ACRYLONITRILE	5	U	U	5	20	UG/L	
ALLYL CHLORIDE	0.5	U	U	0.5	2	UG/L	
BENZENE	0.2	U	U	0.2	0.5	UG/L	
BROMOBENZENE	0.2	U	U	0.2	1	UG/L	
BROMOCHLOROMETHANE	0.2	U	U	0.2	1	UG/L	
BROMODICHLOROMETHANE	0.2	U	U	0.2	1	UG/L	
BROMOFORM	0.3	U	U	0.3	1	UG/L	
BROMOMETHANE	0.3	U	U	0.3	1	UG/L	
CARBON DISULFIDE	0.2	U	U	0.2	1	UG/L	
CARBON TETRACHLORIDE	0.2	U	U	0.2	0.5	UG/L	

Field ID	HAR19GW01	S016					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
CHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
CHLOROETHANE	0.3	U	U	0.3	1	UG/L	
CHLOROFORM	0.2	U	U	0.2	1	UG/L	
CHLOROMETHANE	0.3	U	U	0.3	1	UG/L	
CHLOROPRENE	0.5	U	U	0.5	1	UG/L	
CHLOROTRIFLUOROETHYLENE	2.3			0.2	1	UG/L	
CIS-1,2-DICHLOROETHENE	49			0.2	1	UG/L	
CIS-1,3-DICHLOROPROPENE	0.2	U	U	0.2	0.5	UG/L	
DIBROMOCHLOROMETHANE	0.2	U	U	0.2	1	UG/L	
DIBROMOMETHANE	0.2	U	U	0.2	2	UG/L	
DICHLORODIFLUOROMETHANE	0.6	J	J	0.3	1	UG/L	
ETHYL METHACRYLATE	0.5	U	U	0.5	3	UG/L	
ETHYLBENZENE	0.2	U	U	0.2	1	UG/L	
HEXACHLOROBUTADIENE	0.2	U	U	0.2	1	UG/L	
IODOMETHANE	0.3	U	U	0.3	1	UG/L	
ISOBUTANOL	20	U	U	20	40	UG/L	
ISOPROPANOL		J	U	20	40	UG/L UG/L	MS LICE (I)
ISOPROPANOL	61						MS>UCL (J)
ICODDODYI DENZENE	61	J		20	40	UG/L	MSRPD (J)
ISOPROPYLBENZENE	0.2	U	U	0.2	2	UG/L	
METHACRYLONITRILE	5	U	U	5	10	UG/L	
METHYL ETHYL KETONE	5	U	U	5	10	UG/L	
METHYL ISOBUTYL KETONE (MIBK		U	U	2.1	10	UG/L	
METHYL METHACRYLATE	0.5	U	U	0.5	4	UG/L	
METHYLENE CHLORIDE	0.5	U	U	0.5	1	UG/L	
ETHYL-TERT-BUTYL-ETHER (MTB		U	U	0.2	1	UG/L	
M-XYLENE & P-XYLENE	0.4	U	U	0.4	1	UG/L	
N-BUTYLBENZENE	0.2	U	U	0.2	1	UG/L	
N-PROPYLBENZENE	0.2	U	U	0.2	2	UG/L	
O-XYLENE	0.2	U	U	0.2	1	UG/L	
PENTACHLOROETHANE	0.5	U	U	0.5	1	UG/L	
P-ISOPROPYLTOLUENE	0.2	U	U	0.2	2	UG/L	
PROPIONITRILE	10	U	U	10	20	UG/L	
SEC-BUTYLBENZENE	0.2	U	U	0.2	1	UG/L	
STYRENE	0.2	U	U	0.2	2	UG/L	
TERT-BUTYLBENZENE	0.2	U	U	0.2	1	UG/L	
TETRACHLOROETHENE	0.2	U	U	0.2	1	UG/L	
TOLUENE	0.2	U	U	0.2	1	UG/L	
TRANS-1,2-DICHLOROETHENE	31			0.2	1	UG/L	
TRANS-1,3-DICHLOROPROPENE	0.2	U	U	0.2	0.5	UG/L	
TRANS-1,4-DICHLORO-2-BUTENE	1	U	U	1	2	UG/L	
TRICHLOROETHENE	49			0.2	1	UG/L	
CHLOROFLUOROMETHANE (FREO)	0.3	U	U	0.3	1	UG/L	
VINYL ACETATE	0.5	U	U	0.5	1	UG/L	
VINYL CHLORIDE	2.5			0.2	0.5	UG/L	
Field ID	ND125CW04	D011					
	ND135GW011		Loh				
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-TETRACHLOROETHANE	0.2	U	U	0.2	1	UG/L	. 37

Field ID	ND135GW01	D011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1,1-TRICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1,2,2-TETRACHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
TRICHLORO-1,2,2-TRIFLUOROETH	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,1,2-TRICHLOROETHANE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
1,1-DICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1-DICHLOROETHENE	1.1			0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1-DICHLOROPROPENE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,2,3-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,2,3-TRICHLOROPROPANE	0.5	U	U	0.5	2	UG/L	
1,2,4-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,2,4-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
1,2-DICHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,2-DICHLOROETHANE	0.2	U	U	0.2	0.5	UG/L	
	5	exclude	U	5	12	UG/L	RE (exclude)
1,2-DICHLOROPROPANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,3,5-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
1,3-DICHLOROBENZENE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
1,3-DICHLOROPROPANE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
1,4-DICHLOROBENZENE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
2,2-DICHLOROPROPANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
CHLORO-1,1,1-TRIFLUOROETHAN		U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
2-CHLOROETHYL VINYL ETHER	1	R	U	1	2	UG/L	2Cleve (R)
	25	exclude	U	25	50	UG/L	RE (exclude)
	25	exclude	U	25	50	UG/L	2Cleve (R)
2-CHLOROTOLUENE	5	exclude	U	5	25	UG/L	RE (exclude)
A HEVANOVE	0.2	U	U	0.2	1	UG/L	LOC HOL (
2-HEXANONE	120	exclude	U	120	250	UG/L	LCS>UCL (none)
	120	exclude	U	120	250	UG/L	RE (exclude)
	5	U	U	5	10	UG/L	
4-CHLOROTOLUENE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)

Field ID ND135GW01D011 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) **ACETONE** 8.6 J J 10 UG/L 5 120 exclude U 120 250 UG/L RE (exclude) U **ACETONITRILE** 10 U 10 20 UG/L 250 exclude U 250 500 UG/L RE (exclude) ACROLEIN 5 UJ U 5 20 UG/L LCS<LCL (UJ) 120 U 120 500 UG/L exclude RE (exclude) ACRYLONITRILE 120 exclude U 120 500 UG/L RE (exclude) U U 5 5 20 UG/L ALLYL CHLORIDE 0.5 U U 0.5 2 UG/L 12 exclude U 12 50 UG/L RE (exclude) BENZENE 1.2 0.2 0.5 UG/L 5 U 5 12 exclude UG/L RE (exclude) **BROMOBENZENE** 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) BROMOCHLOROMETHANE 0.2 U U 0.2 1 UG/L 25 5 exclude U 5 UG/L RE (exclude) BROMODICHLOROMETHANE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) **BROMOFORM** 0.3 U U 0.3 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) **BROMOMETHANE** 0.3 U U 0.3 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) CARBON DISULFIDE 0.2 U 0.2 U UG/L 1 5 exclude U 5 25 UG/L RE (exclude) CARBON TETRACHLORIDE U 0.2 U 0.2 0.5 UG/L 5 exclude U 5 12 UG/L RE (exclude) CHLOROBENZENE 0.2 U U 0.2 1 UG/L 5 5 25 exclude U UG/L RE (exclude) CHLOROETHANE 0.3 U U 0.3 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) CHLOROFORM 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) CHLOROMETHANE 7.5 exclude U 7.5 25 UG/L RE (exclude) 0.3 U U 0.3 1 UG/L **CHLOROPRENE** 0.5 U U 0.5 1 UG/L 12 U 12 25 exclude UG/L RE (exclude) CHLOROTRIFLUOROETHYLENE 1.8 0.2 1 UG/L 25 exclude U 5 UG/L RE (exclude) 5 CIS-1,2-DICHLOROETHENE 0.2 420 exclude Е 1 UG/L RE (exclude) 560 5 25 UG/L CIS-1.3-DICHLOROPROPENE 0.2 U U 0.2 0.5 UG/L 5 exclude U 5 12 UG/L RE (exclude) DIBROMOCHLOROMETHANE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) DIBROMOMETHANE 0.2 U U 0.2 2 UG/L 5 exclude U 5 50 UG/L RE (exclude) DICHLORODIFLUOROMETHANE J 0.3 0.49 J 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) ETHYL METHACRYLATE 0.5 U U 0.5 3 UG/L 12 U 12 75 UG/L RE (exclude) exclude

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Field ID ND135GW01D011 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) **ETHYLBENZENE** 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) U HEXACHLOROBUTADIENE 0.3 U 0.3 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) IODOMETHANE 0.3 U U 0.3 1 UG/L 7.5 U 7.5 25 UG/L RE (exclude) exclude ISOBUTANOL 20 U U 20 40 UG/L 500 exclude U 500 1000 UG/L RE (exclude) ISOPROPANOL RE (exclude) 500 exclude U 500 1000 UG/L 60 20 40 UG/L ISOPROPYLBENZENE 0.2 U U 0.2 2 UG/L 50 U 5 exclude 5 UG/L RE (exclude) METHACRYLONITRILE 5 U U 5 10 UG/L 120 exclude U 120 250 UG/L RE (exclude) METHYL ETHYL KETONE 5 U U 5 10 UG/L 250 120 exclude U 120 UG/L RE (exclude) **1ETHYL ISOBUTYL KETONE (MIBK** 2.1 U U 2.1 10 UG/L 52 exclude U 52 250 UG/L RE (exclude) METHYL METHACRYLATE 0.5 U U 0.5 4 UG/L 12 exclude U 12 100 UG/L RE (exclude) METHYLENE CHLORIDE 12 U 12 25 UG/L LB<RL (none) exclude 0.5 U U 0.5 UG/L 1 25 12 exclude U 12 UG/L RE (exclude) ETHYL-TERT-BUTYL-ETHER (MTB) 0.2 U U 0.2 1 UG/L 5 exclude U 5 2.5 UG/L RE (exclude) M-XYLENE & P-XYLENE 0.4 U U 0.4 1 UG/L 10 25 exclude U 10 RE (exclude) UG/L N-BUTYLBENZENE 0.2 U U 0.2 1 UG/L 5 U exclude 5 25 UG/L RE (exclude) N-PROPYLBENZENE 0.2 U U 0.2 2 UG/L 5 exclude U 5 50 UG/L RE (exclude) O-XYLENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) PENTACHLOROETHANE 0.5 U U 0.5 1 UG/L 12 exclude U 12 25 UG/L RE (exclude) P-ISOPROPYLTOLUENE 0.2 U U 0.2 2 UG/L 5 exclude U 5 50 UG/L RE (exclude) PROPIONITRILE 250 250 exclude U 500 UG/L RE (exclude) U 10 U 10 20 UG/L U SEC-BUTYLBENZENE 0.2 U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) STYRENE 0.2 U U 0.2 2 UG/L 5 U 5 50 UG/L exclude RE (exclude) TERT-BUTYLBENZENE 0.2 U U 0.2 UG/L 5 exclude U 5 25 UG/L RE (exclude) TETRACHLOROETHENE 0.2 U U 0.2 1 UG/L 5 U 5 25 exclude UG/L RE (exclude) TOLUENE 5 exclude U 5 25 UG/L RE (exclude) J 0.2 FD>RPD (J) 4.1 1 UG/L TRANS-1,2-DICHLOROETHENE 20 5 25 UG/L exclude RE (exclude)

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Field ID	ND135GW011						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
	20			0.2	1	UG/L	
TRANS-1,3-DICHLOROPROPENE	0.2	U	U	0.2	0.5	UG/L	
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	5	exclude	U	5	12	UG/L	RE (exclude)
TRANS-1,4-DICHLORO-2-BUTENE	1	U	U	1	2	UG/L	, ,
,	25	exclude	U	25	50	UG/L	RE (exclude)
TRICHLOROETHENE	230			5	25	UG/L	` ,
	250	exclude	Е	0.2	1	UG/L	RE (exclude)
HLOROFLUOROMETHANE (FREON		U	U	0.3	1	UG/L	` ,
`	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
VINYL ACETATE	0.5	U	U	0.5	1	UG/L	` ,
	12	exclude	U	12	25	UG/L	RE (exclude)
VINYL CHLORIDE	37			0.2	0.5	UG/L	(
	38	exclude		5	12	UG/L	RE (exclude)
Field ID	ND135GW01	S011					
	ND133G WOT	Final	Lab				
Analyte	Result	Flag	Flag				
Allalyte	Nesuit	9		MDL	RL	Units	ValidationReason (Flag
1,1,1,2-TETRACHLOROETHANE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
1,1,1-TRICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1,2,2-TETRACHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
TRICHLORO-1,2,2-TRIFLUOROETH	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,1,2-TRICHLOROETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,1-DICHLOROETHANE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
1,1-DICHLOROETHENE	5	exclude	U	5	25	UG/L	RE (exclude)
	1.1			0.2	1	UG/L	
1,1-DICHLOROPROPENE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,2,3-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,2,3-TRICHLOROPROPANE	0.5	U	U	0.5	2	UG/L	
1,2,4-TRICHLOROBENZENE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
1,2,4-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
1,2-DICHLOROBENZENE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
1,2-DICHLOROETHANE	0.2	U	U	0.2	0.5	UG/L	
	5	exclude	U	5	12	UG/L	RE (exclude)
1,2-DICHLOROPROPANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
1,3,5-TRIMETHYLBENZENE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	• /

Field ID ND135GW01S011 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 5 U 25 UG/L RE (exclude) exclude 5 1.3-DICHLOROPROPANE 0.2 U U 0.2 2 UG/L 5 exclude U 5 50 UG/L RE (exclude) 1,4-DICHLOROBENZENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) 2,2-DICHLOROPROPANE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) -CHLORO-1,1,1-TRIFLUOROETHAN 0.2 U U 0.2 UG/L 1 RE (exclude) 5 exclude U 5 25 UG/L 2-CHLOROETHYL VINYL ETHER R U 1 1 2 UG/L 2Cleve (R) R U 2 UG/L MS<LCL (R) 1 R U 2 1 UG/L SD<LCL (R) 1 25 U 25 50 exclude UG/L RE (exclude) 25 exclude U 25 50 UG/L 2Cleve (R) 2-CHLOROTOLUENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) 2-HEXANONE 120 exclude U 120 250 UG/L LCS>UCL (none) 5 U U 5 10 UG/L LCS>UCL (none) 120 U 120 250 exclude UG/L RE (exclude) 4-CHLOROTOLUENE 0.2 U U 0.2 1 UG/L 5 U 5 25 UG/L exclude RE (exclude) **ACETONE** 5 U 5 10 UG/L 120 250 120 exclude U UG/L RE (exclude) **ACETONITRILE** 10 U U 10 20 UG/L 250 exclude U 250 500 UG/L RE (exclude) **ACROLEIN** 5 U U 5 20 UG/L 120 exclude U 120 500 RE (exclude) UG/L ACRYLONITRILE 5 U 5 U 20 UG/L U 120 120 exclude 500 UG/L RE (exclude) ALLYL CHLORIDE 0.5 U U 0.5 2 UG/L exclude 12 IJ 12 50 UG/L RE (exclude) BENZENE 1.2 0.2 0.5 UG/L 5 exclude U 5 12 UG/L RE (exclude) BROMOBENZENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) BROMOCHLOROMETHANE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) BROMODICHLOROMETHANE 0.2 0.2 U U 1 UG/L 5 5 25 exclude U UG/L RE (exclude) U **BROMOFORM** 0.3 U 0.3 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) **BROMOMETHANE** 0.3 U U 0.3 1 UG/L 7.5 U 7.5 25 UG/L RE (exclude) exclude CARBON DISULFIDE 5 exclude U 5 25 UG/L (exclude) 0.2 U U 0.2 UG/L 1 CARBON TETRACHLORIDE 0.2 U U 0.2 0.5 UG/L 5 U 5 12 exclude UG/L RE (exclude) CHLOROBENZENE 0.2 U U 0.2 1 UG/L 5 U 5 25 exclude UG/L RE (exclude) CHLOROETHANE 0.3 U U 0.3 UG/L 1

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Field ID	ND135GW01						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
CHLOROFORM	0.2	U	U	0.2	1	UG/L	, ,
	5	exclude	U	5	25	UG/L	RE (exclude)
CHLOROMETHANE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
CHLOROPRENE	0.5	U	U	0.5	1	UG/L	
	12	exclude	U	12	25	UG/L	RE (exclude)
CHLOROTRIFLUOROETHYLENE	1.6			0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
CIS-1,2-DICHLOROETHENE	430	exclude	E	0.2	1	UG/L	RE (exclude)
	570			5	25	UG/L	MS <lcl (none)<="" td=""></lcl>
	570			5	25	UG/L	SD <lcl (none)<="" td=""></lcl>
CIS-1,3-DICHLOROPROPENE	0.2	U	U	0.2	0.5	UG/L	
	5	exclude	U	5	12	UG/L	RE (exclude)
DIBROMOCHLOROMETHANE	0.2	U	U	0.2	1	UG/L	
	5	exclude	U	5	25	UG/L	RE (exclude)
DIBROMOMETHANE	0.2	U	U	0.2	2	UG/L	
	5	exclude	U	5	50	UG/L	RE (exclude)
DICHLORODIFLUOROMETHANE	0.44	J	J	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
ETHYL METHACRYLATE	0.5	U	U	0.5	3	UG/L	
	12	exclude	U	12	75	UG/L	RE (exclude)
ETHYLBENZENE	5	exclude	U	5	25	UG/L	RE (exclude)
	0.2	U	U	0.2	1	UG/L	
HEXACHLOROBUTADIENE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
IODOMETHANE	0.3	U	U	0.3	1	UG/L	
	7.5	exclude	U	7.5	25	UG/L	RE (exclude)
ISOBUTANOL	20	U	U	20	40	UG/L	MSRPD (none)
	500	exclude	U	500	1000	UG/L	RE (exclude)
ISOPROPANOL	29	J	J	20	40	UG/L	
	500	exclude	U	500	1000	UG/L	RE (exclude)
ISOPROPYLBENZENE	5	exclude	U	5	50	UG/L	RE (exclude)
	0.2	U	U	0.2	2	UG/L	
METHACRYLONITRILE	120	exclude	U	120	250	UG/L	RE (exclude)
	5	U	U	5	10	UG/L	
METHYL ETHYL KETONE	5	U	U	5	10	UG/L	55 (1.1)
ACTIVITY ISODUMNIA METRONIC AMBI	120	exclude	U	120	250	UG/L	RE (exclude)
METHYL ISOBUTYL KETONE (MIBK		U	U	2.1	10	UG/L	PF (1.1)
MERINA MERILAGRALAGE	52	exclude	U	52	250	UG/L	RE (exclude)
METHYL METHACRYLATE	0.5	U	U	0.5	4	UG/L	DE (1.1)
METHALENE CHI ODIDE	12	exclude	U	12	100	UG/L	RE (exclude)
METHYLENE CHLORIDE	0.5	U	U	0.5	1	UG/L	LB <rl (none)<="" td=""></rl>
	12 12	exclude exclude	U U	12 12	25 25	UG/L	RE (exclude)
ETHAL TERT BUTAL ETHER (MTR						UG/L	LB <rl (none)<="" td=""></rl>
ETHYL-TERT-BUTYL-ETHER (MTB		exclude	U	5	25	UG/L	RE (exclude)
M VVI ENE % D VVI ENE	0.2	U	U	0.2	1	UG/L	
M-XYLENE & P-XYLENE	0.4	U	U	0.4	1	UG/L	DE (avaluda)
N-BUTYLBENZENE	10 0.2	exclude U	U U	10 0.2	25 1	UG/L UG/L	RE (exclude)

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Field ID ND135GW01S011 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 5 25 UG/L exclude U 5 RE (exclude) N-PROPYLBENZENE 0.2 U 0.2 UG/L U 2 50 5 exclude U 5 UG/L RE (exclude) O-XYLENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) PENTACHLOROETHANE 0.5 U U 0.5 1 UG/L U 12 exclude 12 25 UG/L RE (exclude) P-ISOPROPYLTOLUENE 0.2 U U 0.2 2 UG/L exclude 5 U 5 50 UG/L RE (exclude) PROPIONITRILE 10 U U 10 20 UG/L 250 exclude U 250 500 UG/L RE (exclude) U SEC-BUTYLBENZENE 0.2 U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) 0.2 U U 2 STYRENE 0.2 UG/L 5 exclude U 5 50 UG/L RE (exclude) TERT-BUTYLBENZENE 0.2 U U 0.2 UG/L 1 5 exclude U 5 25 UG/L RE (exclude) TETRACHLOROETHENE 0.2 U U 0.2 1 UG/L 5 exclude U 5 25 UG/L RE (exclude) TOLUENE 6.6 exclude J 5 25 UG/L RE (exclude) 6.6 J 0.2 1 UG/L FD>RPD (J) TRANS-1,2-DICHLOROETHENE 22 0.2 1 UG/L 21 5 25 UG/L exclude J RE (exclude) TRANS-1,3-DICHLOROPROPENE 0.2 U U 0.2 0.5 UG/L 12 5 exclude U 5 UG/L RE (exclude) TRANS-1,4-DICHLORO-2-BUTENE 1 U U 1 2 UG/L 25 50 RE (exclude) 25 exclude U UG/L TRICHLOROETHENE 5 25 UG/L MS>UCL (None) 220 5 SD>UCL (None) 25 UG/L 220 0.2 250 exclude Е 1 UG/L RE (exclude) CHLOROFLUOROMETHANE (FREON 0.3 0.3 U U 1 UG/L 7.5 exclude U 7.5 25 UG/L RE (exclude) U VINYL ACETATE 0.5 U 0.5 1 UG/L 12 12 25 RE (exclude) exclude IJ UG/L VINYL CHLORIDE 48 0.2 0.5 UG/L SD<LCL (None) 46 exclude 5 12 UG/L RE (exclude) 48 0.2 UG/L MS<LCL (None)

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LB <rl< td=""><td>Laboratory blank contamination less than the reporting limit</td><td>Blank</td></rl<>	Laboratory blank contamination less than the reporting limit	Blank
FD>RPD	Field duplicate exceeds RPD criteria	FieldDuplicate
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
MSRPD	Matrix spike RPD criteria exceedance	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 Method SW8270C

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC					
NativeID	Гуре І	Dilution ABLotValue	EBLotValue	TBLotValue		
WATER						
HAR19GW01S016	Ν	1.19 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
HAR19GW01S016MS	MS	1.09				
HAR19GW01S016SD	SD	0.95				
ND135GW01D011	FD	1.08 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01S011	Ν	1.01 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302		
ND135GW01S011MS	MS	1.03				
ND135GW01S011SD	SD	1.05				

1. Case Narrative Items of Interest

The following items were noted: LCS<LCL; MS<LCL; SD<LCL

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: BENZIDINE (MS - HAR19GW01S016MS), BENZIDINE

(MS - ND135GW01S011MS), HEXACHLOROCYCLOPENTADIENE (MS - HAR19GW01S016MS), HEXACHLOROCYCLOPENTADIENE (MS - ND135GW01S011MS), N-NITROSODIMETHYLAMINE (NDMA) (MS -

ND135GW01S011MS), PYRIDINE (MS - ND135GW01S011MS). These SD's were out of

control: BENZIDINE (SD - ND135GW01S011SD),

HEXACHLOROCYCLOPENTADIENE (SD - HAR19GW01S016SD),

HEXACHLOROCYCLOPENTADIENE (SD - ND135GW01S011SD). All RPD

acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>BEN</u>	<u>ZIDINE</u>			
	HAR19GW01	S016	5	9 UG/L	UJ	MS <lcl< td=""></lcl<>
	ND135GW018	S011	5	0 UG/L	UJ	MS <lcl< td=""></lcl<>
	ND135GW018	S011	5	0 UG/L	UJ	SD <lcl< td=""></lcl<>
WATER		HEX.	ACHLOROCY(<u>CLOPENTADIENE</u>		
	HAR19GW01	S016	1	2 UG/L	UJ	MS <lcl< td=""></lcl<>
	HAR19GW01	S016	1	2 UG/L	UJ	SD <lcl< td=""></lcl<>
	ND135GW018	S011	1	0 UG/L	UJ	MS <lcl< td=""></lcl<>
	ND135GW018	S011	1	0 UG/L	UJ	SD <lcl< td=""></lcl<>
WATER		<u>N-NI</u>	TROSODIMET	<u>HYLAMINE (NDM</u>		
	ND135GW018	S011	1	0 UG/L	UJ	MS <lcl< td=""></lcl<>
WATER		<u>PYRI</u>	DINE			
	ND135GW018	S011	4	10 UG/L	UJ	MS <lcl< td=""></lcl<>

4. Laboratory Control Sample

These LCS analytes were out of control: 2,4-DIMETHYLPHENOL (BD), BIS(2-CHLOROISOPROPYL)ETHER (BD), HEXACHLOROBUTADIENE (BD), HEXACHLOROCYCLOPENTADIENE (BD), HEXACHLOROCYCLOPENTADIENE (BS), ISOPHORONE (BD), NITROBENZENE (BD), N-NITROSODIMETHYLAMINE (NDMA) (BD), PYRIDINE (BD). These LCS RPD analytes were out of control: 1,3-DINITROBENZENE (BS), 1-METHYL NAPHTHALENE (BS), 2,4,5-TRICHLOROPHENOL (BS), 2,4,6-TRICHLOROPHENOL (BS), 2-CHLORONAPHTHALENE (BS), 2-NITROANILINE (BS), ACENAPHTHYLENE (BS), DIMETHYL PHTHALATE (BS), PYRENE (BS).

<u>Matrix</u>	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BD	LCD1W	2,4-DIMETHYLPHENOL	67	70	120
WATER	BD	LCD1W	BIS(2-CHLOROISOPROP	69	70	120
WATER	BD	LCD1W	HEXACHLOROBUTADIEN	68	70	120
WATER	BD	LCD1W	HEXACHLOROCYCLOPE	57	70	120
WATER	BD	LCD1W	ISOPHORONE	64	70	120
WATER	BD	LCD1W	NITROBENZENE	67	70	120
WATER	BD	LCD1W	N-NITROSODIMETHYLA	63	70	120
WATER	BD	LCD1W	PYRIDINE	65	70	120
WATER	BS	LCS1W	HEXACHLOROCYCLOPE	69	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2,4-DIMETHYLPHENOL (BD),

BIS(2-CHLOROISOPROPYL)ETHER (BD), HEXACHLOROBUTADIENE (BD),

HEXACHLOROCYCLOPENTADIENE (BD), HEXACHLOROCYCLOPENTADIENE (BS), ISOPHORONE (BD), NITROBENZENE (BD), N-NITROSODIMETHYLAMINE (NDMA) (BD), PYRIDINE (BD). These LCS RPD analytes were out of control: 1,3-DINITROBENZENE (BS), 1-METHYL NAPHTHALENE (BS), 2,4,5-TRICHLOROPHENOL (BS), 2,4,6-TRICHLOROPHENOL (BS), 2-CHLORONAPHTHALENE (BS), 2-NITROANILINE (BS), ACENAPHTHYLENE (BS),

DIMETHYL PHTHALATE (BS), PYRENE (BS).

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,2,4-TRICHLOROBENZENE	12	U	U	6	12	UG/L	
1,2-DICHLOROBENZENE	12	U	U	6	12	UG/L	
1,2-DIPHENYLHYDRAZINE	12	U	U	6	12	UG/L	
1,3-DICHLOROBENZENE	12	U	U	6	12	UG/L	
1,3-DINITROBENZENE	12	U	U	6	12	UG/L	LCSRPD (none)
1,4-DICHLOROBENZENE	12	U	U	6	12	UG/L	
1-METHYL NAPHTHALENE	12	U	U	6	12	UG/L	LCSRPD (none)
2,3,4,6-TETRACHLOROPHENOL	12	U	U	6	12	UG/L	
2,4,5-TRICHLOROPHENOL	12	U	U	6	12	UG/L	LCSRPD (none)
2,4,6-TRICHLOROPHENOL	12	U	U	6	12	UG/L	LCSRPD (none)
2,4-DICHLOROPHENOL	12	U	U	6	12	UG/L	
2,4-DIMETHYLPHENOL	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2,4-DINITROPHENOL	24	U	U	6	24	UG/L	
2,4-DINITROTOLUENE	12	U	U	6	12	UG/L	
2,6-DICHLOROPHENOL	12	U	U	6	12	UG/L	
2,6-DINITROTOLUENE	12	U	U	6	12	UG/L	
2-CHLORONAPHTHALENE	12	U	U	6	12	UG/L	LCSRPD (none)
2-CHLOROPHENOL	12	U	U	6	12	UG/L	
2-METHYLNAPHTHALENE	12	U	U	6	12	UG/L	
2-METHYLPHENOL	12	U	U	6	12	UG/L	
2-NITROANILINE	24	U	U	6	24	UG/L	LCSRPD (none)
2-NITROPHENOL	12	U	U	6	12	UG/L	
3,3'-DICHLOROBENZIDINE	12	U	U	6	12	UG/L	
3,5-DIMETHYLPHENOL	24	U	U	6	24	UG/L	
3-NITROANILINE	12	U	U	6	12	UG/L	
4,6-DINITRO-2-METHYLPHENOL	24	U	U	6	24	UG/L	
4-BROMOPHENYL PHENYL ETHEI	R 12	U	U	6	12	UG/L	
4-CHLORO-3-METHYLPHENOL	12	U	U	6	12	UG/L	
4-CHLOROANILINE	12	U	U	6	12	UG/L	
4-CHLOROPHENYL PHENYL ETHE	R 12	U	U	6	12	UG/L	
4-METHYLPHENOL	12	U	U	6	12	UG/L	
4-NITROANILINE	12	U	U	6	12	UG/L	
4-NITROPHENOL	24	U	U	6	24	UG/L	
ACENAPHTHENE	12	U	U	6	12	UG/L	
ACENAPHTHYLENE	12	U	U	6	12	UG/L	LCSRPD (none)
ANILINE	24	U	U	12	24	UG/L	, ,
ANTHRACENE	12	U	U	6	12	UG/L	
BENZIDINE	59	UJ	U	24	59	UG/L	MS <lcl (uj)<="" td=""></lcl>
BENZO(A)ANTHRACENE	12	U	U	6	12	UG/L	. ,
BENZO(A)PYRENE	12	U	U	6	12	UG/L	

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Field ID	HAR19GW01S016								
		Final	Lab						
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)		
BENZO(B)FLUORANTHENE	12	U	U	6	12	UG/L			
BENZO(GHI)PERYLENE	12	U	U	6	12	UG/L			
BENZO(K)FLUORANTHENE	12	U	U	6	12	UG/L			
BENZOIC ACID	48	U	U	24	48	UG/L			
BENZYL ALCOHOL	12	U	U	6	12	UG/L			
BIS(2-CHLOROETHOXY)METHANE	12	U	U	6	12	UG/L			
BIS(2-CHLOROETHYL)ETHER	12	U	U	6	12	UG/L			
BIS(2-CHLOROISOPROPYL)ETHER	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
BIS(2-ETHYLHEXYL)PHTHALATE	12	U	U	6	12	UG/L			
BUTYL BENZYL PHTHALATE	12	U	U	6	12	UG/L			
CARBAZOLE	12	U	U	6	12	UG/L			
CHRYSENE	12	U	U	6	12	UG/L			
DIBENZO(A,H)ANTHRACENE	12	U	U	6	12	UG/L			
DIBENZOFURAN	12	U	U	6	12	UG/L			
DIETHYL PHTHALATE	12	U	U	6	12	UG/L			
DIMETHYL PHTHALATE	12	U	U	6	12	UG/L	LCSRPD (none)		
DI-N-BUTYL PHTHALATE	12	U	U	6	12	UG/L			
DI-N-OCTYL PHTHALATE	12	U	U	6	12	UG/L			
FLUORANTHENE	12	U	U	6	12	UG/L			
FLUORENE	12	U	U	6	12	UG/L			
HEXACHLOROBENZENE	12	U	U	6	12	UG/L			
HEXACHLOROBUTADIENE	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
HEXACHLOROCYCLOPENTADIENE	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
	12	UJ	U	6	12	UG/L	MS <lcl (uj)<="" td=""></lcl>		
	12	UJ	U	6	12	UG/L	SD <lcl (uj)<="" td=""></lcl>		
HEXACHLOROETHANE	12	U	U	6	12	UG/L			
INDENO(1,2,3-CD)PYRENE	12	U	U	6	12	UG/L			
ISOPHORONE	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
NAPHTHALENE	12	U	U	6	12	UG/L			
NITROBENZENE	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
-NITROSODIMETHYLAMINE (NDM/	12	UJ	U	6	12	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
NITROSODI-N-PROPYLAMINE (NDP	12	U	U	6	12	UG/L			
N-NITROSODIPHENYLAMINE	12	U	U	6	12	UG/L			
PENTACHLOROPHENOL (PCP)	24	U	U	6	24	UG/L			
PHENANTHRENE	12	U	U	6	12	UG/L			
PHENOL	12	U	U	6	12	UG/L			
PYRENE	12	U	U	6	12	UG/L	LCSRPD (none)		
PYRIDINE	48	UJ	U	24	48	UG/L	LCS <lcl (uj)<="" td=""></lcl>		

Field ID	ND135GW011	ND135GW01D011							
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
1,2,4-TRICHLOROBENZENE	11	U	U	5.4	11	UG/L			
1,2-DICHLOROBENZENE	11	U	U	5.4	11	UG/L			
1,2-DIPHENYLHYDRAZINE	11	U	U	5.4	11	UG/L			
1,3-DICHLOROBENZENE	11	U	U	5.4	11	UG/L			
1,3-DINITROBENZENE	11	U	U	5.4	11	UG/L	LCSRPD (none)		
1,4-DICHLOROBENZENE	11	U	U	5.4	11	UG/L			

Field ID ND135GW01D011 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U 11 LCSRPD (none) 1-METHYL NAPHTHALENE 11 U UG/L 5.4 2.3.4.6-TETRACHLOROPHENOL 11 U U 5.4 11 UG/L U 2,4,5-TRICHLOROPHENOL 11 U 5.4 11 UG/L LCSRPD (none) 2,4,6-TRICHLOROPHENOL 11 U U 5.4 11 UG/L LCSRPD (none) 2,4-DICHLOROPHENOL 11 U U 5.4 11 UG/L 2,4-DIMETHYLPHENOL 11 UJ U 5.4 11 UG/L LCS<LCL (UJ) 2,4-DINITROPHENOL 22 U U 5.4 22 UG/L 2,4-DINITROTOLUENE 11 U U 11 5.4 UG/L 2,6-DICHLOROPHENOL 11 U U 5.4 11 UG/L U U 2,6-DINITROTOLUENE 11 5.4 11 UG/L 2-CHLORONAPHTHALENE 11 U U 11 LCSRPD (none) 5.4 UG/L U U 2-CHLOROPHENOL 11 5.4 11 UG/L U U 2-METHYLNAPHTHALENE 11 5.4 11 UG/L U 2-METHYLPHENOL 11 U 5.4 11 UG/L 2-NITROANILINE 22 U U 5.4 22 UG/L LCSRPD (none) U 2-NITROPHENOL 11 U 5.4 11 UG/L 3,3'-DICHLOROBENZIDINE 11 U U 5.4 11 UG/L 3,5-DIMETHYLPHENOL 22 U U 5.4 22 UG/L U U 11 3-NITROANILINE 11 5.4 UG/L 4,6-DINITRO-2-METHYLPHENOL 22 U U 5.4 22 UG/L 4-BROMOPHENYL PHENYL ETHER 11 U U 5.4 11 UG/L 4-CHLORO-3-METHYLPHENOL 11 U U 11 UG/L 5.4 U U 4-CHLOROANILINE 11 5.4 11 UG/L 4-CHLOROPHENYL PHENYL ETHER 11 U U 5.4 11 UG/L 4-METHYLPHENOL 11 IJ U 5.4 11 UG/L 4-NITROANILINE 11 U U 5.4 11 UG/L 22 22 4-NITROPHENOL IJ IJ 5.4 UG/L **ACENAPHTHENE** U 11 U 5.4 11 UG/L ACENAPHTHYLENE U U LCSRPD (none) 11 5.4 11 UG/L ANILINE 22 U U 11 22 UG/L ANTHRACENE 11 U U 5.4 11 UG/L BENZIDINE 54 U U 22 54 UG/L BENZO(A)ANTHRACENE 11 U U 5.4 11 UG/L U 11 BENZO(A)PYRENE 11 IJ 5.4 UG/L BENZO(B)FLUORANTHENE 11 U U 5.4 11 UG/L BENZO(GHI)PERYLENE IJ U 5.4 11 11 UG/L BENZO(K)FLUORANTHENE 11 U U 5.4 11 UG/L BENZOIC ACID 43 U IJ 22 43 UG/L U BENZYL ALCOHOL 11 U 5.4 11 UG/L BIS(2-CHLOROETHOXY)METHANE 11 IJ U 5.4 11 UG/L BIS(2-CHLOROETHYL)ETHER 11 U U 5.4 11 UG/L BIS(2-CHLOROISOPROPYL)ETHER 11 Ш U 5.4 11 UG/L LCS<LCL (UJ) BIS(2-ETHYLHEXYL)PHTHALATE 11 U U 5.4 11 UG/L BUTYL BENZYL PHTHALATE 11 U U 5.4 11 UG/L CARBAZOLE 11 U U 5.4 11 UG/L CHRYSENE 11 U U 5.4 11 UG/L DIBENZO(A,H)ANTHRACENE 11 U U 5.4 11 UG/L DIBENZOFURAN 11 U U 5.4 11 UG/L DIETHYL PHTHALATE 11 U U 11 5.4 UG/L DIMETHYL PHTHALATE 11 U U 11 UG/L LCSRPD (none) 5.4

Field ID	ND135GW01	D011					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
DI-N-BUTYL PHTHALATE	11	U	U	5.4	11	UG/L	
DI-N-OCTYL PHTHALATE	11	U	U	5.4	11	UG/L	
FLUORANTHENE	11	U	U	5.4	11	UG/L	
FLUORENE	11	U	U	5.4	11	UG/L	
HEXACHLOROBENZENE	11	U	U	5.4	11	UG/L	
HEXACHLOROBUTADIENE	11	UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
EXACHLOROCYCLOPENTADIENE	11	UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	11	UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
HEXACHLOROETHANE	11	U	U	5.4	11	UG/L	
INDENO(1,2,3-CD)PYRENE	11	U	U	5.4	11	UG/L	
ISOPHORONE	11	UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
NAPHTHALENE	11	U	U	5.4	11	UG/L	, ,
NITROBENZENE	11	UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
NITROSODIMETHYLAMINE (NDMA		UJ	U	5.4	11	UG/L	LCS <lcl (uj)<="" td=""></lcl>
ITROSODI-N-PROPYLAMINE (NDP		U	U	5.4	11	UG/L	(00)
N-NITROSODIPHENYLAMINE	11	U	U	5.4	11	UG/L	
PENTACHLOROPHENOL (PCP)	22	U	U	5.4	22	UG/L	
PHENANTHRENE	11	U	U	5.4	11	UG/L	
PHENOL	11	U	U	5.4	11	UG/L	
PYRENE	11	U	U	5.4	11	UG/L	LCSRPD (none)
PYRIDINE	43	UJ	U	22	43	UG/L	LCS <lcl (uj)<="" td=""></lcl>
Field ID							
Field ID	ND135GW01						
A 1.		Final	Lab				
Δηςιντο	Raquilt	Flag	Flag	ME	ъ.		V 11 41 5 (F)
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,2,4-TRICHLOROBENZENE	10	Flag U	U	5	10	UG/L	ValidationReason (Flag
<u> </u>	10 10			5 5	10 10	UG/L UG/L	ValidationReason (Flag
1,2,4-TRICHLOROBENZENE	10	U	U	5	10	UG/L UG/L UG/L	ValidationReason (Flag
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE	10 10	U U	U U	5 5	10 10	UG/L UG/L	ValidationReason (Flaç
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE	10 10 10	U U U	U U U	5 5 5	10 10 10	UG/L UG/L UG/L	ValidationReason (Flag
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE	10 10 10 10	U U U	U U U U	5 5 5 5	10 10 10 10	UG/L UG/L UG/L UG/L	
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE	10 10 10 10	U U U U	U U U U U	5 5 5 5 5	10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L	
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE	10 10 10 10 10	U U U U U	U U U U U	5 5 5 5 5 5	10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE	10 10 10 10 10 10	U U U U U U	U U U U U U	5 5 5 5 5 5 5	10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL	10 10 10 10 10 10 10	U U U U U U U	U U U U U U U	5 5 5 5 5 5 5 5	10 10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL	10 10 10 10 10 10 10 10	U U U U U U U U	U U U U U U U U	5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL	10 10 10 10 10 10 10 10 10	U U U U U U U U	U U U U U U U U	5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4,6-TRICHLOROPHENOL 2,4-DICHLOROPHENOL	10 10 10 10 10 10 10 10 10 10	U U U U U U U U U	U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL	10 10 10 10 10 10 10 10 10 10	U U U U U U U U U U	U U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 2,4-DIMETHYLPHENOL 2,4-DINITROPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 20	U U U U U U U U U U	U U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 20	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DICHLOROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL	10 10 10 10 10 10 10 10 10 10 10 20	U U U U U U U U U U U U	U U U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 20	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 2,4-DINITROPHENOL 2,4-DINITROTOLUENE 2,6-DICHLOROPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 10	U U U U U U U U U U U	U U U U U U U U U U U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 20 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none)
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,6-DICHLOROPHENOL 2,6-DICHLOROPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 10 1	U U U U U U U U U U U U U U		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DINITROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROTOLUENE 2,6-DICHLOROPHENOL 2,6-DINITROTOLUENE 2-CHLORONAPHTHALENE	10 10 10 10 10 10 10 10 10 10 10 10 10 1			5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DINITROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROTOLUENE 2,6-DICHLOROPHENOL 2,6-DINITROTOLUENE 2-CHLORONAPHTHALENE 2-CHLOROPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 10 1			5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROTOLUENE 2,6-DICHLOROPHENOL 2,6-DICHLOROPHENOL 2,6-DINITROTOLUENE 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 10 1	U U U U U U U U U U U U U U U U U U U		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DICHLOROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,4-DINITROPHENOL 2,6-DICHLOROPHENOL 2,6-DICHLOROPHENOL 2,6-DINITROTOLUENE 2-CHLOROPHENOL 2-CHLOROPHENOL 2-METHYLNAPHTHALENE 2-METHYLNAPHTHALENE 2-METHYLPHENOL 2-NITROANILINE	10 10 10 10 10 10 10 10 10 10 10 10 10 1			5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>
1,2,4-TRICHLOROBENZENE 1,2-DICHLOROBENZENE 1,2-DIPHENYLHYDRAZINE 1,3-DINITROBENZENE 1,3-DINITROBENZENE 1,4-DICHLOROBENZENE 1-METHYL NAPHTHALENE 2,3,4,6-TETRACHLOROPHENOL 2,4,5-TRICHLOROPHENOL 2,4-DICHLOROPHENOL 2,4-DIMETHYLPHENOL 2,4-DINITROPHENOL 2,4-DINITROTOLUENE 2,6-DICHLOROPHENOL 2,6-DINITROTOLUENE 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-CHLOROPHENOL 2-METHYLPHENOL	10 10 10 10 10 10 10 10 10 10 10 10 10 1	U U U U U U U U U U U U U U U U U U U		5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	10 10 10 10 10 10 10 10 10 10 10 10 10 1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	LCSRPD (none) LCSRPD (none) LCSRPD (none) LCS <lcl (uj)<="" td=""></lcl>

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Field ID	ND135GW013	S011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
3-NITROANILINE	10	U	U	5	10	UG/L	
4,6-DINITRO-2-METHYLPHENOL	20	U	U	5	20	UG/L	
4-BROMOPHENYL PHENYL ETHER	10	U	U	5	10	UG/L	
4-CHLORO-3-METHYLPHENOL	10	U	U	5	10	UG/L	
4-CHLOROANILINE	10	U	U	5	10	UG/L	
4-CHLOROPHENYL PHENYL ETHER	10	U	U	5	10	UG/L	
4-METHYLPHENOL	10	U	U	5	10	UG/L	
4-NITROANILINE	10	U	U	5	10	UG/L	
4-NITROPHENOL	20	U	U	5	20	UG/L	
ACENAPHTHENE	10	U	U	5	10	UG/L	
ACENAPHTHYLENE	10	U	U	5	10	UG/L	LCSRPD (none)
ANILINE	20	U	U	10	20	UG/L	
ANTHRACENE	10	U	U	5	10	UG/L	
BENZIDINE	50	UJ	U	20	50	UG/L	MS <lcl (uj)<="" td=""></lcl>
	50	UJ	U	20	50	UG/L	SD <lcl (uj)<="" td=""></lcl>
BENZO(A)ANTHRACENE	10	U	U	5	10	UG/L	` /
BENZO(A)PYRENE	10	U	U	5	10	UG/L	
BENZO(B)FLUORANTHENE	10	U	U	5	10	UG/L	
BENZO(GHI)PERYLENE	10	U	U	5	10	UG/L	
BENZO(K)FLUORANTHENE	10	U	U	5	10	UG/L	
BENZOIC ACID	40	U	U	20	40	UG/L	
BENZYL ALCOHOL	10	U	U	5	10	UG/L	
BIS(2-CHLOROETHOXY)METHANE		U	U	5	10	UG/L	
BIS(2-CHLOROETHYL)ETHER	10	U	U	5	10	UG/L	
BIS(2-CHLOROISOPROPYL)ETHER	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
BIS(2-ETHYLHEXYL)PHTHALATE	10	U	U	5	10	UG/L	_=== (==)
BUTYL BENZYL PHTHALATE	10	U	U	5	10	UG/L	
CARBAZOLE	10	U	U	5	10	UG/L	
CHRYSENE	10	U	U	5	10	UG/L	
DIBENZO(A,H)ANTHRACENE	10	U	U	5	10	UG/L	
DIBENZOFURAN	10	U	U	5	10	UG/L	
DIETHYL PHTHALATE	10	U	U	5	10	UG/L	
DIMETHYL PHTHALATE	10	U	U	5	10	UG/L	LCSRPD (none)
DI-N-BUTYL PHTHALATE	10	U	U	5	10	UG/L	Ecold D (none)
DI-N-OCTYL PHTHALATE	10	U	U	5	10	UG/L	
FLUORANTHENE	10	U	U	5	10	UG/L	
FLUORENE	10	U	U	5	10	UG/L	
HEXACHLOROBENZENE	10	U	U	5	10	UG/L	
HEXACHLOROBUTADIENE	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
HEXACHLOROCYCLOPENTADIENE		UJ	U	5	10	UG/L	SD <lcl (uj)<="" td=""></lcl>
TIEAACTILOROC TCLOTENTADIENE	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	10	UJ	U	5	10	UG/L UG/L	MS <lcl (uj)<="" td=""></lcl>
HEXACHLOROETHANE	10	U	U	5	10	UG/L UG/L	MS <lcl (uj)<="" td=""></lcl>
INDENO(1,2,3-CD)PYRENE	10	U	U	5	10	UG/L UG/L	
							ICC (III)
ISOPHORONE	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
NAPHTHALENE	10	U	U	5	10	UG/L	ICCACL (III)
NITROBENZENE	10	UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
-NITROSODIMETHYLAMINE (NDM/		UJ	U	5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	10	UJ	U	5	10	UG/L	MS <lcl (uj)<="" td=""></lcl>

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Validated Form I

Field ID	ND135GW01	S011					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
NITROSODI-N-PROPYLAMINE (NDP	10	U	U	5	10	UG/L	
N-NITROSODIPHENYLAMINE	10	U	U	5	10	UG/L	
PENTACHLOROPHENOL (PCP)	20	U	U	5	20	UG/L	
PHENANTHRENE	10	U	U	5	10	UG/L	
PHENOL	10	U	U	5	10	UG/L	
PYRENE	10	U	U	5	10	UG/L	LCSRPD (none)
PYRIDINE	40	UJ	U	20	40	UG/L	MS <lcl (uj)<="" td=""></lcl>
	40	UJ	U	20	40	UG/L	LCS <lcl (uj)<="" td=""></lcl>

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCSRPD	LCS RPD criteria exceeded	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16G302 Method SW9040

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR19GW01S016	N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
HAR19GW01S016	LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	N	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302
ND135GW01S011	LR	1 Missing Association DP	Missing Association DP	26071602 / CAQW2459Q001 / 16G302

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blanks were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates All acceptance criteria were met.

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** No spikes in this SDG. No spike dupes in this SDG.
- **5. Surrogates** No surrogates in this SDG.

16G302 SW9040

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01S	8016					
Analyta	Result	Final Flag	Lab Flag				
Analyte	Result	ı iag	ı iag	MDL	RL	Units	ValidationReason (Flag)
PH	7.41			0.1	0.1	PH UNITS	
Field ID	ND135GW01E	0011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
PH	7.06			0.1	0.1	PH UNITS	
Field ID	ND135GW018	5011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
PH	7.09			0.1	0.1	PH UNITS	

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16	070773	Method	E300.0			
Reviewer:	mfesler		Date:	8/9/2016	Matrix:	WATER
Reviewed:	8/26/2016	<u></u>				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

(QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR20GW01S006	N	10 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	Ν	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR20GW01S006MS	MS	1		
HAR20GW01S006SD	SD	1		
RD49AGW01S005	N	10 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	Ν	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks Were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

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5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	37			0.52	1	MG/L	
Fluoride	0.36			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	520		=D	2.7	10	MG/L	InvalidLabFlag (=)
Field ID	RD49AGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	50			0.52	1	MG/L	
Fluoride	0.28			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	600		=D	2.7	10	MG/L	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

SDG 16070773		Method	E1625C			
Reviewer: mfesl	er		Da	ate: 8/9/201	6 Matrix:	WATER
Reviewed: 8	3/26/2016	-				
Field Samples Field blank association		nber / FieldID /	SDG			
NativeID	QAQC Type Dilution	ABLotValue	:	EBLotValue		TBLotValue
WATER HAR20GW01S006	N 1 Mis	sing Association [OP .	Missing Association DP		12071601 / CAQW2442Q001 / 16070
RD49AGW01S005	N 1 Mis	sing Association [OP	Missing Association DP		12071601 / CAQW2442Q001 / 16070
1. Case Narrative Items of Interes	t There wer	e no items of c	concern			
2. Blank Summar	y					
Field Blanks	No Field Blanks	were found.				
Method Blanks	No Method Blan	nk detects were	e found.			
3. Spikes and Dup Field Duplica	licates tes No FD Asso	ociated.				
Laboratory Dupli	cates None in	this SDG				
Matrix Spike	No MS's for this	SSDG. No SE	O's for this SDC	G. MS RPD: None for th	is SDG.	
4. Laboratory Con	ntrol Sample	All acceptar	nce criteria wer	e met.		

16070773 E1625C

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	RD49AGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	13			2.9	9.6	NG/L	

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160°	70773	Method	SW8015B			
Reviewer:	mfesler		Date:	8/9/2016	Matrix:	WATER
Reviewed:	8/26/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	TB	1		12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	N	20 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	N	20 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative Items of Interest

The following items were noted: Sur<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- 4. Laboratory Control Sample All acceptance criteria were met.
- **5. Surrogates**These surrogates were out of control: 1,4-Bromofluorobenzene (HAR20GW01S006), 1,4-Bromofluorobenzene (RD49AGW01S005). Flagging for C4-C12 (TPH as Gas) only.

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Field ID	LabsampleID	UpperLimit Lo	owerLimit	Result	Surrogate
HAR20GW01S006	160707732	150	50	48	1,4-Bromofluorobenzene
RD49AGW01S005	160707733	150	50	48	1,4-Bromofluorobenzene

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: These surrogates were out of control: 1,4-Bromofluorobenzene (HAR20GW01S006), 1,4-

Bromofluorobenzene (RD49AGW01S005).

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	21	J	=J	8	50	UG/L	InvalidLabFlag (J)
C15-C20	490			8	50	UG/L	•
C21-C30	280			8	50	UG/L	
C30-C40 (TPH as Oil)	34	J	=J	8	50	UG/L	InvalidLabFlag (J)
C4-C12 (TPH as Gas)	50	UJ	U	48	50	UG/L	Sur <lcl (uj)<="" td=""></lcl>
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	790			8	50	UG/L	
Field ID	RD49AGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDI	DI	Lleite	Volidation December (Floor
				MDL	RL	Units	ValidationReason (Flag
C12-C14	1000			8	50	UG/L	
C15-C20	2000			8	50	UG/L	
C21-C30	140			8	50	UG/L	
C30-C40 (TPH as Oil)	26	J	=J	8	50	UG/L	InvalidLabFlag (J)
G L G L A (TERRIT	120	J	=b	48	50	UG/L	Sur <lcl (j)<="" td=""></lcl>
C4-C12 (TPH as Gas)	130	J	-0	.0			
C4-C12 (TPH as Gas) C7	50	U	U	8	50	UG/L	(1)
,						UG/L UG/L	

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
Sur <lcl< td=""><td>Surrogate recovery less than the lower control limit</td><td>SurrogateRecovery</td></lcl<>	Surrogate recovery less than the lower control limit	SurrogateRecovery

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

 SDG 16070773
 Method SW8260B

 Reviewer: mfesler
 Date: 8/9/2016 Matrix: WATER

 Reviewed: ___ 8/26/2016 _____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

(QAQC			
NativeID	Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	TB	1		12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	Ν	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR20GW01S006MS	MS	1		
HAR20GW01S006SD	SD	1		
RD49AGW01S005	N	10 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	Ν	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative Items of Interest

The following items were noted: 2CLEVE; MS<LSL; SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - HAR20GW01S006MS),

Pentachloroethane (MS - HAR20GW01S006MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - HAR20GW01S006SD), Pentachloroethane (SD - HAR20GW01S006SD). All RPD acceptance criteria were met. For high recoveries and

sample results ND, no flagging applied to those analytes.

Matrix Sample ID LR Type Analyte Result MS/MSD Qualifier* Criteria

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	HAR20GW01S006	16 UG/L	R	MS <lcl< th=""></lcl<>
	HAR20GW01S006	16 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>Pentachloroethane</u>		
	HAR20GW01S006	1.5 UG/L	none	MS>UCL
	HAR20GW01S006	1.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: t-1,3-Dichloropropene (BS). Since recovery high and sample result ND, no flagging applied. No spike dupes in this SDG.

<u>Matrix</u>	QAQC Type	Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS 0	9916246232BS	t-1.3-Dichloropropene	127	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

RD49AGW01S005.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: t-1,3-Dichloropropene (BS). No

spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

RD49AGW01S005. Sample re-analyzed on a diluted basis due to concentration of target

analyte.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Analyte	
1,1,1,2-Tetrachloroethane	
1,1,1-Trichloroethane 0.3 U U 0.3 10 UG/L 1,1,2,2-Tetrachloroethane 0.41 U U 0.41 10 UG/L 1,1,2-Trichloroethane 0.45 U U 0.45 25 UG/L 1,1,2-Trichloroethane 0.38 U U 0.38 10 UG/L 1,1-Dichloroethane 0.28 U U 0.28 10 UG/L 1,1-Dichloroptopene 0.43 U U 0.43 25 UG/L 1,1-Dichloropropene 0.46 U U 0.46 10 UG/L 1,2,3-Trichlorobenzene 0.51 U U 0.64 5 UG/L 1,2,4-Trichlorobenzene 0.5 U U 0.5 25 UG/L 1,2,4-Trimethylbenzene 0.36 U U 0.36 10 UG/L 1,2-Dibromo-3-Chloropropane 1.2 U U 0.36 10 UG/L 1,2-Dichlorobenzene 0.46 U U 0.46 10 UG/L 1	ason (Flag)
1,1,2,2-Tetrachloroethane 0.41 U U 0.41 10 UG/L 1,1,2-Trichloro-1,2,2-Trifluoroethane 0.45 U U 0.45 25 UG/L 1,1,2-Trichloroethane 0.38 U U 0.38 10 UG/L 1,1-Dichloroethane 0.28 U U 0.28 10 UG/L 1,1-Dichloroethene 0.43 U U 0.43 25 UG/L 1,1-Dichloropropene 0.46 U U 0.46 10 UG/L 1,2,3-Trichlorobenzene 0.51 U U 0.64 5 UG/L 1,2,3-Trichlorobenzene 0.5 U U 0.64 5 UG/L 1,2,4-Trimethylbenzene 0.5 U U 0.36 10 UG/L 1,2-Dibromo-3-Chloropropane 1.2 U U 0.36 10 UG/L 1,2-Dichlorobenzene 0.46 U U 0.36 10 UG/L 1,2-Dichloropropane 0.42 U U 0.46 10 UG/L <t< td=""><td></td></t<>	
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1,3-Dichloropropane 0.3 U U 0.3 10 UG/L	
• •	
1.4-Dichlorobenzene 0.43 U U 0.43 10 UG/L	
1,1 21211101100111101110111011101110111011	
2,2-Dichloropropane 0.36 U U 0.36 5 UG/L	
2-Butanone 2.2 U U 2.2 50 UG/L	
2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L	
2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L MS <lcl< td=""><td>(R)</td></lcl<>	(R)
16 R U 16 25 UG/L SD <lcl< td=""><td>(R)</td></lcl<>	(R)
16 R U 16 25 UG/L 2Cleve (R)
2-Chlorotoluene 0.24 U U 0.24 25 UG/L	
2-Hexanone 2.1 U U 2.1 50 UG/L	
4-Chlorotoluene 0.13 U U 0.13 25 UG/L	
4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L	
Acetone 6 U U 6 50 UG/L	
Benzene 0.14 U U 0.14 10 UG/L	
Bromobenzene 0.3 U U 0.3 25 UG/L	
Bromochloromethane 0.48 U U 0.48 25 UG/L	
Bromodichloromethane 0.21 U U 0.21 10 UG/L	
Bromoform 0.5 U U 0.5 25 UG/L	
Bromomethane 3.9 U U 3.9 25 UG/L	
c-1,2-Dichloroethene 44 0.48 5 UG/L	
c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L	

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	SD>UCL (none)
	1.5	U	U	1.5	10	UG/L	MS>UCL (none)
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	12			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	12			0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.6			0.3	0.5	UG/L	
Field ID	RD49AGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	2.3	J	=J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
, ,	50	U	-				

Field ID	RD49AGW01	S005					
A 1.	D 1	Final Flag	Lab Flag				
Analyte	Result	i lay	i iag	MDL	RL	Units	ValidationReason (Flag
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.2	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	1700	O	=D	4.8	50	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	invariables mg ()
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane Dichlorodifluoromethane	0.46	U	U	0.46	5	UG/L	
	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	60			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)

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Validated Form I

Field ID	RD49AGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.39	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	2	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	3.4			0.3	0.5	UG/L	

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070773) Ma	thod SW8260	nR-SIM	
Reviewer: mfes			Date: 8/9/2016	Matrix: WATER
	8/26/2016	_	G/G/2010	matrix. Witten
Field Sample	S n lot values: LotNumber / l	FieldID / SDG		
NativeID	QAQC	otValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	TB 1			12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	N 1 Missing Ass	sociation DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	N 5 Missing Ass		Missing Association DP	12071601 / CAQW2442Q001 / 160707
RD49AGW01S005	N 1 Missing Ass	sociation DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
1. Case Narrative Items of Intere	There were no it	ems of concern		
2. Blank Summa	ry			
Field Blanks	No Field Blank detects	s were found.		
Method Blanks	No Method Blank dete	ects were found.		
3. Spikes and Duj	olicates			
Field Duplica	ntes No FD Associated	l.		
Laboratory Dupl	icates None in this S	SDG		
Matrix Spike	No MS's for this SDG	. No SD's for this SD	G. MS RPD: None for this SI	OG.
4. Laboratory Co	ntrol Sample All	acceptance criteria we	ere met.	

5. Surrogates All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	2.1			0.35	1	UG/L	
Field ID	RD49AGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	1.8	U	U	1.8	5	UG/L	

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Validated Form I

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 160	70774	Method	4500-NH3F			
Reviewer:	bjones7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR20GW01S006	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative
Items of Interest
No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.083			0.0086	0.05	MG/L	
Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.06			0.0086	0.05	MG/L	-

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Validated Form I

Data Quality Evaluation

SDG 1607077	74	Method	E300.0				
Reviewer: bjor	nes7		Date:	8/5/2016	Matrix:	WATER	
Reviewed:	9/2/2016						
Field Sample		Number / FieldID /	SDG				
NativeID	QAQC Type Dilutio	on ABLotValue	,	EBLotValue		TBLotValue	
WATER HAR07GWS008	N 1	Missing Association D	DP M	issing Association DP	1:	2071601 / CAQW2442	Q001 / 16070
1. Case Narrativ Items of Inter	No ita	ms of concern.					
2. Blank Summ	ary						
Field Blanks	No Field Bl	anks were found.					
Method Blanks	No Method	Blank detects were	e found.				
3. Spikes and Du	uplicates						
Field Duplic	cates No FD	Associated.					
Laboratory Duj	plicates _{Nor}	ne in this SDG					
Matrix Spike	No MS's for	this SDG. No SD	D's for this SDG. MS	RPD: None for this S	DG.		
4. Laboratory C	ontrol Sampl	le All acceptar	nce criteria were met.				
5. Surrogates	No su	urrogates in this SI	OG.				
6. Tuning and M Calibration	fass _{N/}	A					

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.31			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	

Data Quality Evaluation

SDG 160	70774	Method	E314				
Reviewer:	bjones7			Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	=					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008MS	MS	1		
HAR07GWS008SD	SD	1		
HAR20GW01S006	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative **Items of Interest**

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

No Method Blank detects were found. **Method Blanks**

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG. 6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	

Data Quality Evaluation

Calibration

						<u></u>
SDG 16070774		Method	E1625C			
Reviewer: bjone	s7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				
Field Samples Field blank association		nber / FieldID /	SDG			
NativeID	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER HAR07GWS008	N 1 Mis	sing Association D	DP N	fissing Association DP	1	2071601 / CAQW2442Q001 / 16070
1. Case Narrative Items of Interes	No items of	of concern.				
2. Blank Summar	·y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Blan	nk detects were	e found.			
3. Spikes and Dup Field Duplica	licates tes No FD Asso	ociated.				
Laboratory Dupli			o's for this SDG. MS	RPD: None for this SI	OG.	
4. Laboratory Con	ntrol Sample	All acceptan	nce criteria were met.			
5. Surrogates	All accep	otance criteria v	were met.			
6. Tuning and Ma	SS Tuning	g and Mass Cal	libration were not ex	amined by AutoDV.		

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	19			3	10	NG/L	

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Validated Form I

Data Quality Evaluation

SDG 16070774 Method SW8015B

Reviewer: bjones7 Date: 8/5/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	20 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008MS	MS	1		
HAR07GWS008SD	SD	1		

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	TB	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 1607077

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

16070774 SW8015B

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	200		=b	48	50	UG/L	InvalidLabFlag (=)
C7	8	U	U	8	50	UG/L	
C8-C11	17	J	= J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	17	J	= J	8	50	UG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

SDG 16070774 Method SW8260B

Reviewer: bjones7 Date: 8/5/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type D	Dilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	50 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008	N	10 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilt	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	TB	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 1607077

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample

These LCS analytes were out of control: Bromomethane (BS), c-1,3-Dichloropropene (BS), Pentachloroethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	UpperLimit
WATER	BS	09916246231BS	Pentachloroethane	68	70	120
WATER	BS	09916246231BS	t-1,3-Dichloropropene	127	70	120
WATER	BS	09916246233BS	Bromomethane	68	70	120
WATER	BS	09916246233BS	c-1,3-Dichloropropene	123	70	120
WATER	BS	09916246233BS	t-1,3-Dichloropropene	140	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

HAR07GWS008.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS), c-1,3-Dichloropropene (BS), Pentachloroethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this

SDG. VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

HAR07GWS008. Sample was re-analyzed on a diluted basis due to concentration of target

analytes

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

16070774 SW8260B

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR07GWS	008					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	4	U	U	4	50	UG/L	
1,1,1-Trichloroethane	3	U	U	3	100	UG/L	
1,1,2,2-Tetrachloroethane	4.1	U	U	4.1	100	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	4.5	U	U	4.5	250	UG/L	
1,1,2-Trichloroethane	3.8	U	U	3.8	100	UG/L	
1,1-Dichloroethane	2.8	U	U	2.8	100	UG/L	
1,1-Dichloroethene	9.7	J	=J	4.3	250	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	4.6	U	U	4.6	100	UG/L	
1,2,3-Trichlorobenzene	5.1	U	U	5.1	250	UG/L	
1,2,3-Trichloropropane	6.4	U	U	6.4	50	UG/L	
1,2,4-Trichlorobenzene	5	U	U	5	250	UG/L	
1,2,4-Trimethylbenzene	3.6	U	U	3.6	100	UG/L	
1,2-Dibromo-3-Chloropropane	12	U	U	12	250	UG/L	
1,2-Dibromoethane	3.6	U	U	3.6	100	UG/L	
1,2-Dichlorobenzene	4.6	U	U	4.6	100	UG/L	
1,2-Dichloroethane	2.4	U	U	2.4	50	UG/L	
1,2-Dichloropropane	4.2	U	U	4.2	100	UG/L	
1,3,5-Trimethylbenzene	2.8	U	U	2.8	100	UG/L	
1,3-Dichlorobenzene	4	U	U	4	100	UG/L	
1,3-Dichloropropane	3	U	U	3	100	UG/L	
1,4-Dichlorobenzene	4.3	U	U	4.3	100	UG/L	
2,2-Dichloropropane	3.6	U	U	3.6	50	UG/L	
2-Butanone	22	U	U	22	500	UG/L	
2-Chloro-1,1,1-trifluoroethane	21	U	U	21	250	UG/L	
2-Chloroethyl Vinyl Ether	160	R	U	160	250	UG/L	2Cleve (R)
2-Chlorotoluene	2.4	U	U	2.4	250	UG/L	
2-Hexanone	21	U	U	21	500	UG/L	
4-Chlorotoluene	1.3	U	U	1.3	250	UG/L	
4-Methyl-2-Pentanone	44	U	U	44	250	UG/L	
Acetone	60	U	U	60	500	UG/L	
Benzene	1.4	U	U	1.4	100	UG/L	
Bromobenzene	3	U	U	3	250	UG/L	
Bromochloromethane	4.8	U	U	4.8	250	UG/L	
Bromodichloromethane	2.1	U	U	2.1	100	UG/L	
Bromoform	5	U	U	5	250	UG/L	
Bromomethane	39	U	U	39	250	UG/L	
c-1,2-Dichloroethene	2900		=D	24	250	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	2.5	U	U	2.5	100	UG/L	
Carbon Tetrachloride	2.3	U	U	2.3	5	UG/L	
Chlorobenzene	1.7	U	U	1.7	100	UG/L	

mfesler

Vinyl Chloride

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Field ID HAR07GWS008 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 23 U U 250 UG/L Chloroethane 23 Chloroform 4.6 U U 4.6 100 UG/L U 18 U 250 UG/L Chloromethane 18 Chlorotrifluoroethylene 18 U U 18 250 UG/L 2.5 U U Dibromochloromethane 2.5 100 UG/L Dibromomethane 4.6 U U 4.6 50 UG/L Dichlorodifluoromethane 4.6 U U 250 UG/L 4.6 U Ethylbenzene 1.4 U 1.4 100 UG/L Hexachloro-1,3-Butadiene U 250 3.2 U 3.2 UG/L 370 U U 370 1000 UG/L Isopropanol Isopropylbenzene 5.8 U U 5.8 100 UG/L U U 250 Methylene Chloride 6.4 6.4 UG/L Methyl-t-Butyl Ether (MTBE) 3.1 U U 3.1 250 UG/L U U n-Butylbenzene 2.3 2.3 250 UG/L n-Propylbenzene 1.7 U U 1.7 100 UG/L o-Xylene 2.3 U U 2.3 100 UG/L 3 U U 3 100 UG/L p/m-Xylene 15 UJ Pentachloroethane U 15 100 LCS<LCL (UJ) UG/L U p-Isopropyltoluene 1.6 U 1.6 100 UG/L sec-Butylbenzene 2.5 U U 2.5 250 UG/L Styrene 1.7 U U 1.7 100 UG/L t-1,2-Dichloroethene 270 3.7 100 UG/L U U UG/L LCS>UCL (none) t-1,3-Dichloropropene 2.5 2.5 100 tert-Butylbenzene 2.8 U U 2.8 250 UG/L Tetrachloroethene 3.9 U U 3.9 50 UG/L Toluene 2.4 U U 2.4 100 UG/L Trichloroethene 490 3.7 50 UG/L Trichlorofluoromethane 17 U U 17 250 UG/L

3

5

UG/L

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

Data Quality Evaluation

SDG 16070774 Method SW8260B-SIM

Reviewer: bjones7 Date: 8/5/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	Dilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	50 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2442Q001	ТВ	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 1607077

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

16070774 SW8260B-SIM

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions. **Interest**

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,2,3-Trichloropropane	0.12	U	U	0.12	0.25	UG/L	
1,4-Dioxane	18	U	U	18	50	UG/L	

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Validated Form I

Data Quality Evaluation

SDG 16070	774	Method	SW8270C-SIM			
Reviewer: b	jones7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016					
Field Samp	ples iation lot values: Lo	tNumber / FieldID /	SDG			
NativeID	QAQC Type Dilution	on ABLotValue	. E	BLotValue		TBLotValue
WATER HAR20GW01S00	06 N	Missing Association (DP Missi	ng Association DP	12	2071601 / CAQW2442Q001 / 16070
1. Case Narra Items of Int	Ma ita	ems of concern.				
2. Blank Sum	mary					
Field Blanks	No Field B	lanks were found.				
Method Blan	ks No Method	Blank detects were	e found.			
3. Spikes and Field Dup	Duplicates blicates No FD	Associated.				
	Duplicates No					
Matrix Spike	No MS's fo	r this SDG. No SI	D's for this SDG. MS RF	PD: None for this SI	OG.	
4. Laboratory	Control Samp	le All acceptar	nce criteria were met.			
5. Surrogates	All a	cceptance criteria	were met.			
6. Tuning and Calibration		uning and Mass Ca	libration were not exami	ned by AutoDV.		

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR20GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Bis(2-Ethylhexyl) Phthalate	0.22	J	=J	0.047	9.6	UG/L	InvalidLabFlag (J)
Butyl Benzyl Phthalate	0.051	U	U	0.051	9.6	UG/L	
Diethyl Phthalate	0.051	U	U	0.051	9.6	UG/L	
Dimethyl Phthalate	0.045	J	=J	0.044	9.6	UG/L	InvalidLabFlag (J)
Di-n-Butyl Phthalate	0.19	J	=J	0.077	9.6	UG/L	InvalidLabFlag (J)
Di-n-Octyl Phthalate	0.046	U	U	0.046	9.6	UG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

SDG 16070774	ļ	Method	SW8330A			
Reviewer: bjone	es7		Date:	8/5/2016	Matrix: \	WATER
Reviewed:	9/2/2016	-				
Field Samples		nber / FieldID /	SDG			_
NativeID	QAQC Type Dilution	ABLotValue		EBLotValue	Т	BLotValue
WATER						
HAR07GWS008		sing Association D		Missing Association DP		1601 / CAQW2442Q001 / 160707
HAR20GW01S006	N 1 Mis	sing Association D)P	Missing Association DP	1207	1601 / CAQW2442Q001 / 160707
1. Case Narrative Items of Interes 2. Blank Summan	st No items	of concern.				
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Bla	nk detects were	e found.			
3. Spikes and Dup Field Duplica	olicates ates No FD Asso	ociated.				
Laboratory Dupl	icates None in	n this SDG				
Matrix Spike	No MS's for this	s SDG. No SD	s's for this SDG. M	S RPD: None for this S	DG.	

5. Surrogates All acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

16070774 SW8330A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR07GWS	008					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,3,5-Trinitrobenzene	0.045	U	U	0.045	1	UG/L	
1,3-Dinitrobenzene	0.051	U	U	0.051	1	UG/L	
2,4,6-Trinitrotoluene	0.026	U	U	0.026	1	UG/L	
2,4-Dinitrotoluene	0.039	U	U	0.039	1	UG/L	
2,6-Dinitrotoluene	0.053	U	U	0.053	1	UG/L	
2-Amino-4,6-DNT	0.061	U	U	0.061	1	UG/L	
2-Nitrotoluene	0.04	U	U	0.04	1	UG/L	
3-Nitrotoluene	0.047	U	U	0.047	1	UG/L	
4-Amino-2,6-DNT	0.054	U	U	0.054	1	UG/L	
4-Nitrotoluene	0.054	U	U	0.054	1	UG/L	
HMX	0.047	U	U	0.047	1	UG/L	
Nitrobenzene	0.056	U	U	0.056	1	UG/L	
RDX	0.06	U	U	0.06	1	UG/L	
Tetryl	0.068	U	U	0.068	1	UG/L	
Field ID	HAR20GW01	S006					
	111111111111111111111111111111111111111	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,3,5-Trinitrobenzene	0.05						
1.2 D: '/ 1		U	U	0.05	1.1	UG/L	
1,3-Dinitrobenzene	0.056	U U	U U	0.05 0.056	1.1 1.1	UG/L UG/L	
1,3-Dinitrobenzene 2,4,6-Trinitrotoluene							
<i>'</i>	0.056	U	U	0.056	1.1	UG/L	
2,4,6-Trinitrotoluene	0.056 0.029	U U	U U	0.056 0.029	1.1 1.1	UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene	0.056 0.029 0.043	U U U	U U U	0.056 0.029 0.043	1.1 1.1 1.1	UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene	0.056 0.029 0.043 0.058	U U U U	U U U U	0.056 0.029 0.043 0.058	1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT	0.056 0.029 0.043 0.058 0.067	U U U U	U U U U	0.056 0.029 0.043 0.058 0.067	1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT 2-Nitrotoluene	0.056 0.029 0.043 0.058 0.067 0.044	U U U U U	U U U U U	0.056 0.029 0.043 0.058 0.067 0.044	1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene	0.056 0.029 0.043 0.058 0.067 0.044 0.052	U U U U U U	U U U U U U	0.056 0.029 0.043 0.058 0.067 0.044 0.052	1.1 1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT	0.056 0.029 0.043 0.058 0.067 0.044 0.052	U U U U U U	U U U U U U U	0.056 0.029 0.043 0.058 0.067 0.044 0.052 0.06	1.1 1.1 1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT 4-Nitrotoluene	0.056 0.029 0.043 0.058 0.067 0.044 0.052 0.06	U U U U U U U	U U U U U U U U	0.056 0.029 0.043 0.058 0.067 0.044 0.052 0.06	1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
2,4,6-Trinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT 4-Nitrotoluene HMX	0.056 0.029 0.043 0.058 0.067 0.044 0.052 0.06 0.059	U U U U U U U U	U U U U U U U U	0.056 0.029 0.043 0.058 0.067 0.044 0.052 0.06 0.059	1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	

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Validated Form I

Data Quality Evaluation

SDG 16070774	Met Met	hod SW9	0040C			
Reviewer: bjone	es7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016					
Field Samples	S n lot values: LotNumber / F	ioldID / SDG				
		ieidiD / SDG				
NativeID	QAQC Type Dilution ABLo	otValue	EB	LotValue		TBLotValue
WATER						
HAR07GWS008	N 1 Missing Ass	ociation DP	Missing	Association DP	1:	2071601 / CAQW2442Q001 / 16070
HAR07GWS008	LR 1 Missing Ass	ociation DP	Missing	Association DP	1.	2071601 / CAQW2442Q001 / 16070
1. Case Narrative Items of Interes	No items of conc	ern.				
2. Blank Summar	ry					
Field Blanks	No Field Blanks were	ound.				
Method Blanks	No Method Blanks were	e found.				

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates All acceptance criteria were met.

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** No spikes in this SDG. No spike dupes in this SDG.
- **5. Surrogates** No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR07GWS	008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pH	6.92		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

SDG 16	070858	Method	4500-NH3F			
Reviewer:	bjones7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD05AGW01S006	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05BGW01S007	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708

1. Case Narrative
Items of Interest
No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

16070858 4500-NH3F

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.043	J	= J	0.0086	0.05	MG/L	InvalidLabFlag (J)
Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.051			0.0086	0.05	MG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

SDG 16	6070858	Method	E300.0			
Reviewer:	bjones7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD05AGW01S006	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05AGW01S006MS	MS	1		
RD05AGW01S006SD	SD	1		
RD05BGW01S007	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708

1. Case Narrative
Items of Interest
No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.24			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Field ID	RD05BGW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.11		·	0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	

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Data Quality Evaluation

5. Surrogates

No surrogates in this SDG.

SDG 1	6070858		Method	E314					
Reviewer:	bjones7				Date:	8/5/2016	Matrix:	WATER	
Reviewed:	9/2	/2016	_						
Field S	_	values: LotNu	ımber / FieldID /	SDG					
NativeID	QA Ty	QC pe Dilution	ABLotValue		E	BLotValue		TBLotValue	
WATER									
RD05AGW RD05BGW			issing Association [issing Association [g Association DP g Association DP		13071601 / CAQW2443Q001 / 16 13071601 / CAQW2443Q001 / 16	
1. Case No. Items o	arrative of Interest	No items	s of concern.						
2. Blank	Summary								
Field Bla	ınks N	lo Field Blan	ks were found.						
Method 1	Blanks N	To Method Bl	ank detects were	e found.					
-	and Duplicates		sociated.						
Laborato	ory Duplica	tes None	in this SDG						
Matrix S _l	pike N	Io MS's for th	is SDG. No SE	O's for this	SDG. MS RP	D: None for this S	DG.		
4. Labora	atory Contr	ol Sample	All acceptar	nce criteria	were met. No	o spike dupes in thi	is SDG.		

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	

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Data Quality Evaluation

SDG 16070858	8	Method	E1625C			
Reviewer: bjone			Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Sample		mbor / FioldID /	SDC			
NativeID	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER RD05AGW01S006 RD05BGW01S007		ssing Association [ssing Association [Missing Association DP Missing Association DP		3071601 / CAQW2443Q001 / 16070 3071601 / CAQW2443Q001 / 16070
1. Case Narrative Items of Intere	No itoma	of concern.				
2. Blank Summa	ry					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	ank detects were	e found.			
3. Spikes and Duplica	plicates ates No FD Ass	sociated.				
Laboratory Dupl		n this SDG				
Matrix Spike	No MS's for th	is SDG. No SE	rs for this SDG. MS	S RPD: None for this S	DG.	

5. Surrogates All acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

16070858 E1625C

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	3.1	U	U	3.1	10	NG/L	
Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	13			3	10	NG/L	

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Validated Form I

Data Quality Evaluation

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2443Q001	TB	1		13071601 / CAQW2443Q001 / 160708
RD05AGW01S006	N	20 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05AGW01S006	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05BGW01S007	N	20 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05BGW01S007	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708

1. Case Narrative Items of Interest

The following items was noted; Sur<LCL.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- 4. Laboratory Control Sample All acceptance criteria were met.
- **5. Surrogates** These surrogates were out of control: 1,4-Bromofluorobenzene (RD05AGW01S006).

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Field IDLabsampleIDUpperLimitLowerLimitResultSurrogateRD05AGW01S00616070858215050481,4-Bromofluorobenzene

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: These surrogates were out of control: 1,4-Bromofluorobenzene (RD05AGW01S006). Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

No samples were excluded for dilutions or re-extractions.

Forms Review/ Items of

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	48	UJ	U	48	50	UG/L	Sur <lcl (uj)<="" td=""></lcl>
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	
Field ID	RD05BGW01	5007					
	KD05DG W01	3007					
	KD03DG W01	Final	Lab				
Analyte	Result		Lab Flag	MDL	RL	Units	ValidationReason (Flag
Analyte C12-C14		Final		MDL 8	RL 50	Units UG/L	ValidationReason (Flaç
-	Result	Final Flag	Flag				ValidationReason (Flag
C12-C14	Result	Final Flag U	Flag U	8	50	UG/L	,
C12-C14 C15-C20	Result 8 14	Final Flag U J	Flag U =J	8	50 50	UG/L UG/L	,
C12-C14 C15-C20 C21-C30	8 14 8	Final Flag U J U	Flag U =J U	8 8 8	50 50 50	UG/L UG/L UG/L	,
C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil)	8 14 8 8	Final Flag U J U U	U =J U U	8 8 8	50 50 50 50	UG/L UG/L UG/L UG/L	,
C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil) C4-C12 (TPH as Gas)	Result 8 14 8 8 48	Final Flag U J U U	Flag U =J U U U	8 8 8 8 48	50 50 50 50 50	UG/L UG/L UG/L UG/L UG/L	,

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
Sur <lcl< th=""><th>Surrogate recovery less than the lower control limit</th><th>SurrogateRecovery</th></lcl<>	Surrogate recovery less than the lower control limit	SurrogateRecovery

Data Quality Evaluation

 SDG 16070858
 Method SW8260B

 Reviewer: bjones7
 Date: 8/5/2016 Matrix: WATER

 Reviewed: __ 9/2/2016 _____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2443Q001	TB	1		13071601 / CAQW2443Q001 / 160708
RD05AGW01S006	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05BGW01S007	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
SP33CGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	13071601 / CAQW2443Q001 / 160708

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample These LCS analytes were out of control: Pentachloroethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No

spike dupes in this SDG.

MatrixQAQC TypeField IDAnalyteRecoveryLowerLimitUpperLimitWATERBS09916246231BSPentachloroethane6870120

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WATER BS 09916246231BS t-1,3-Dichloropropene 127 70 120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Pentachloroethane (BS), t-1,3-

Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	UJ	U	1.5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	Des teel (et)
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L	ECS/CCE (Holic)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.37	10	UG/L	
Trichloroethene	0.24	U	U	0.24	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	RD05BGW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
	1.2	U	U	1.2	25	UG/L	
1,2-Dibromo-3-Chloropropane							
1,2-Dibromo-3-Chloropropane 1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
		U U	U U	0.36 0.46	10 10	UG/L UG/L	

Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	validationiteason (i lag
1,3,5-Trimethylbenzene	0.42	U	U	0.42	10	UG/L	
1,3-Dichlorobenzene	0.28	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.4	U	U	0.4	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.45	U	U	0.45	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.2	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U U	U	0.24	25	UG/L UG/L	zcieve (K)
2-Hexanone	2.1	U		2.1	50	UG/L UG/L	
			U				
4-Chlorotoluene	0.13 4.4	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone		U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	UJ	U	1.5	10	UG/L	LCS <lcl (uj)<="" td=""></lcl>
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	,
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	(/
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	

Field ID	RD05BGW01	S007					
	5	Final	Lab Flag				
Analyte	Result	Flag	гіау	MDL	RL	Units	ValidationReason (Flag
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	SP33CGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	,
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.43	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.38	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L UG/L	
1,2-Dichlorobenzene	0.36	U	U	0.36	10	UG/L UG/L	
1,2-Dichloroethane	0.46	U	U	0.46	5	UG/L UG/L	
	0.42	U	U	0.24	10	UG/L UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L UG/L	
1,3,5-Trimethylbenzene 1,3-Dichlorobenzene	0.28	U	U	0.28	10	UG/L UG/L	
	0.4						
1,3-Dichloropropane		U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	

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Vinyl Chloride

0.3

U

U

0.3

0.5

UG/L

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Field ID SP33CGW01S005 Final Lab Flag Flag Analyte Result MDL Units RL ValidationReason (Flag) 1.8 U U 1.8 25 UG/L Chloromethane Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L U Dibromochloromethane 0.25 U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L U U 25 Dichlorod if luoromethane0.460.46 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L U Isopropanol 37 U 37 100 UG/L Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L U U 0.23 0.23 10 UG/L o-Xylene p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 UJ U 1.5 10 UG/L LCS<LCL (UJ) 0.16 U U 0.16 10 UG/L p-Isopropyltoluene 0.25 U U 0.25 25 UG/L sec-Butylbenzene U Styrene 0.17 U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) tert-Butylbenzene 0.28 U U 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 0.37 U U 0.37 5 UG/L Trichlorofluoromethane 1.7 U U 1.7 25 UG/L

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Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous

Data Quality Evaluation

SDG 160	70858	Method	SW8260B-SIM			
Reviewer:	bjones7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	<u>.</u>				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2443Q001	TB	1		13071601 / CAQW2443Q001 / 160708
RD05AGW01S006	N	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD05BGW01S007	Ν	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
RD40GW01S007	Ν	1 Missing Association DP	Missing Association DP	13071601 / CAQW2443Q001 / 160708
SP33CGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	13071601 / CAQW2443Q001 / 160708

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- 4. Laboratory Control Sample All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	RD40GW018	5007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	SP33CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	· ·

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Data Quality Evaluation

SDG 1607085	8 Met	hod SW833	0A		
Reviewer: bjon	es7		Date: 8/5/2016	Matrix: WATER	
Reviewed:	9/2/2016				
Field Sample Field blank association	SS on lot values: LotNumber / F	FieldID / SDG			
NativeID	QAQC	otValue	EBLotValue	TBLotValue	
WATER RD05AGW01S006 RD05BGW01S007	N 1 Missing Ass N 1 Missing Ass		Missing Association DP Missing Association DP	13071601 / CAQW2443Q001 / 1 13071601 / CAQW2443Q001 / 1	
1. Case Narrative Items of Intere	Ma itama of come	ern.			
2. Blank Summa	nry				
Field Blanks	No Field Blanks were	found.			
Method Blanks	No Method Blank dete	cts were found.			
3. Spikes and Du Field Duplic	plicates ates No FD Associated				
Laboratory Dup	licates None in this S	DG			

No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

Matrix Spike

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.049	U	U	0.049	1.1	UG/L	
1,3-Dinitrobenzene	0.055	U	U	0.055	1.1	UG/L	
2,4,6-Trinitrotoluene	0.028	U	U	0.028	1.1	UG/L	
2,4-Dinitrotoluene	0.042	U	U	0.042	1.1	UG/L	
2,6-Dinitrotoluene	0.057	U	U	0.057	1.1	UG/L	
2-Amino-4,6-DNT	0.066	U	U	0.066	1.1	UG/L	
2-Nitrotoluene	0.043	U	U	0.043	1.1	UG/L	
3-Nitrotoluene	0.051	U	U	0.051	1.1	UG/L	
4-Amino-2,6-DNT	0.059	U	U	0.059	1.1	UG/L	
4-Nitrotoluene	0.058	U	U	0.058	1.1	UG/L	
HMX	0.05	U	U	0.05	1.1	UG/L	
Nitrobenzene	0.061	U	U	0.061	1.1	UG/L	
RDX	0.065	U	U	0.065	1.1	UG/L	
Tetryl	0.073	U	U	0.073	1.1	UG/L	
Field ID	RD05BGW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.049	U	U	0.049	1.1	UG/L	_
1,3-Dinitrobenzene	0.055	U	U	0.055	1.1	UG/L	
2,4,6-Trinitrotoluene	0.028	U	U	0.028	1.1	UG/L	
2,4-Dinitrotoluene	0.042	U	U	0.042	1.1	UG/L	
2,6-Dinitrotoluene	0.057	U	U	0.057	1.1	UG/L	
2-Amino-4,6-DNT	0.066	U	U	0.066	1.1	UG/L	
2-Nitrotoluene	0.043	U	U	0.043	1.1	UG/L	
3-Nitrotoluene	0.051	U	U	0.051	1.1	UG/L	
4-Amino-2,6-DNT	0.059	U	U	0.059	1.1	UG/L	
4-Amino-2,6-DN I	0.039	U	C	0.059			
4-Amino-2,6-DN I 4-Nitrotoluene	0.058	U	U	0.059	1.1	UG/L	
· · · · · · · · · · · · · · · · · · ·						UG/L UG/L	
4-Nitrotoluene	0.058	U	U	0.058	1.1		
4-Nitrotoluene HMX	0.058 0.05	U U	U U	0.058 0.05	1.1 1.1	UG/L	

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No surrogates in this SDG.

Data Quality Evaluation

5. Surrogates

SDG 16070858	1	Method	SW9040C			
Reviewer: bjone	s7		Date:	8/5/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association		mber / FieldID / \$	SDG			
NativeID	QAQC Type Dilution	ABLotValue	E	BLotValue	5	TBLotValue
WATER						
RD05AGW01S006 RD05BGW01S007		ssing Association DF ssing Association DF		g Association DP g Association DP		071601 / CAQW2443Q001 / 16070 071601 / CAQW2443Q001 / 16070
1. Case Narrative Items of Interes	No items	of concern.				
2. Blank Summar	·y					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	nks were found.				
3. Spikes and Dup	licates					
Field Duplica	tes No FD Ass	ociated.				
	icates None in	n this SDG				
Laboratory Dupl						

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pН	6.73		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)
Field ID	RD05BGW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
рН	9.07		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

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Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

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Data Quality Evaluation

SDG 160	70920	Method	SW8315A			
Reviewer:	mfesler		Date:	8/31/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

No4*maID	QAQC	ludion ADI odVoluo	EDI atValma	TDI ANAL-
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR07GWS008	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707
HAR07GWS008SD	SD	1		
HAR07GWS008MS	MS	1		
HAR20GW01S006	N	1 Missing Association DP	Missing Association DP	12071601 / CAQW2442Q001 / 160707

1. Case Narrative Items of Interest

The following items were noted: HTp>UCL

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration

No DV

Continuing Calibration

No DV

9. Holding Time

These NativeIDs exceeded holding time: HAR07GWS008, HAR20GW01S006. Hydrazine samples were derivatized 1 day past holding time due to instrument downtime issues. (No problems with Formaldehyde)

Field ID	LabsampleID	AnalysisDate	ExtractDate	Sample Date	Method T	ime Actual HT
HAR07GWS008	8472544	8/6/2016	7/26/2016	7/12/2016	10	14
HAR20GW01S006	8472545	8/6/2016	7/26/2016	7/12/2016	10	14

10. Confirmation

N/A

11. Summary

General Comments

These NativeIDs exceeded holding time: HAR07GWS008, HAR20GW01S006. Hydrazine samples were derivatized 1 day past holding time due to instrument downtime issues. (No problems with Formaldehyde)

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR07GWS	008 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	34	J	J	20	50	UG/L	
Field ID	HAR20GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	24	J	J	20	50	UG/L	

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Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryHTp>UCLHolding time exceededHoldingTime

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070971 **Method** E300.0

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
WS06GW01S002	N	2 09081601 / FBQW1833Q001 / 16080	0670 15071601 / EBQW2176Q001 / 042	2NG 14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080	0670 15071601 / EBQW2176Q001 / 042	2NG 14071601 / CAQW2444Q001 / 160709
WS06GW01S002MS	MS	1		
WS06GW01S002SD	SD	1		
WS08GW01S002	N	1 09081601 / FBQW1833Q001 / 16080	0670 15071601 / EBQW2176Q001 / 042	2NG 14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Diluti	on ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2176Q001	EB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

The following items were noted; MS>UCL, SD>UCL.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: Sulfate (MS - WS06GW01S002MS). These SD's were out

of control: Sulfate (SD - WS06GW01S002SD). All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>Sulfa</u>	ate_			
	WS06GW01S	8002		120 MG/L	J	MS>UCL
	WS06GW01S	3002		120 MG/L	J	SD>UCL

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** No surrogates in this SDG.
- **6. Tuning and Mass** Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	WS06GW01S	5002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Chloride	41			0.52	1	MG/L	
Fluoride	0.14			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	120	J	=D	0.54	2	MG/L	SD>UCL (J)
	120	J	=D	0.54	2	MG/L	MS>UCL (J)
Field ID	WS08GW01S	5002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	25			0.52	1	MG/L	
Fluoride	0.17			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	61			0.27	1	MG/L	

Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070971 Method E1625C

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Diluti	on ABLotValue	EBLotValue	TBLotValue
WATER				
WS06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709
WS08GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilut	ion ABLotValue	EBLotValue	TBLotValue	
WATER					
EBQW2176Q001	EB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097	
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097	

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

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4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	WS06GW018	5002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	
Field ID	WS08GW01S	5002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070971 **Method SW8015B**

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC				
NativeID	Type Di	lution	ABLotValue	EBLotValue	TBLotValue
WATER					
CAQW2444Q001	TB	1			14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	20 09	9081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	1 09	9081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709
WS08GW01S002	N	20 09	9081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709
WS08GW01S002	N	1 09	9081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilut	ion ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2176Q001	EB 2	20 09081601 / FBQW1833Q001	/ 16080670	042NG 14071601 / CAQW2444Q001 / 1607097
EBQW2176Q001	EB	1 09081601 / FBQW1833Q001	/ 16080670 15071601 / EBQW2176Q001 /	042NG 14071601 / CAQW2444Q001 / 1607097
FBQW1833Q001	AB 2	20 09081601 / FBQW1833Q001	/ 16080670 15071601 / EBQW2176Q001 /	042NG 14071601 / CAQW2444Q001 / 1607097
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001	/ 16080670 15071601 / EBQW2176Q001 /	042NG 14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

The following items were noted: Interference

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

16070971 SW8015B

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Matrix Spike

No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG. Interference present in samples; influence from high levels of TCE, cis-1,2-DCE in samples. No Gas

pattern present. Data flagged as non-detect.

M	atrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifie	r* Criteria
V	/ATER		<u>C4-0</u>	C12 (TPH as Ga	<u>ıs)</u>		
		WS06GW01S0	002	8	9 UG/L	U	Interference

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

C8-C30

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

U

U

50

UG/L

50

Field ID	WS06GW018	5002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	16	J	=J	8	50	UG/L	InvalidLabFlag (J)
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	89	U	=b	48	50	UG/L	InvalidLabFlag (=)
	89	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	16	J	= J	8	50	UG/L	InvalidLabFlag (J)
Field ID	WS08GW018	5002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C4-C12 (TPH as Gas) C7	50 50	U U	U U	48 8	50 50	UG/L UG/L	

Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
Interference	Indicates the presence of quantitative interference	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070971 Method SW8260B

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dilu	ntion ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2444Q001	TB	1		14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	5 09081601 / FBQW1833Q001 /	16080670 15071601 / EBQW2176Q001 / (042NG 14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	1 09081601 / FBQW1833Q001 /	16080670 15071601 / EBQW2176Q001 / (042NG 14071601 / CAQW2444Q001 / 160709
WS08GW01S002	N	1 09081601 / FBQW1833Q001 /	16080670 15071601 / EBQW2176Q001 / (042NG 14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	Type Dilution	n ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2176Q001	EB 1	09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097
FBQW1833Q001	AB 1	09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, AB<RL, EB<RL, LCS<LCL.

2. Blank Summary

Field Blanks These analytes had Blank detects: Acetone (AB), Acetone (EB), Isopropanol (AB), Isopropanol

(EB).

Method Blanks No Method Blank detects were found.

Blank T	Type Blank ID	Analyte	<u>Result</u>	<u>ReportLimit</u>	LabFlag	<u>Units</u>	SDG
AB	FBQW1833Q001	Acetone	7.3	50	=J	UG/L	16080670
AB	FBQW1833Q001	Isopropanol	110	100		UG/L	16080670
EB	EBQW2176Q001	Acetone	7.7	50	=J	UG/L	16071078
EB	EBQW2176Q001	Isopropanol	210	100		UG/L	16071078

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample

These LCS analytes were out of control: Bromomethane (BS), c-1,3-Dichloropropene (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

Matrix	QAQC Typ	e Field ID	Analyte	Recovery	LowerLimit	UpperLimit
WATER	BS	09916246233BS	Bromomethane	68	70	120
WATER	BS	09916246233BS	c-1,3-Dichloropropene	123	70	120
WATER	BS	09916246233BS	t-1,3-Dichloropropene	140	70	120

5. Surrogates

All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration

Initial Calibration was not examined by AutoDV.

Continuing Calibration

Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Blanks: These analytes had Blank detects: Acetone (AB), Acetone (EB), Isopropanol (AB),

Isopropanol (EB).

Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

WS06GW01S002.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS), c-1,3-

Dichloropropene (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

16070971 SW8260B

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Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude: WS06GW01S002. Sample was re-analyzed on a diluted basis due to concentration of target analytes.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	WS06GW01S	S002					
	5 "	Final Flag	Lab Flag				
Analyte	Result	riay	riay	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.46	J	=J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	9.2	U	= J	6	50	UG/L	AB <rl (u)<="" td=""></rl>
	9.2	U	= J	6	50	UG/L	EB <rl (u)<="" td=""></rl>
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	230		=D	2.4	25	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	

mfesler

Field ID	WS06GW013	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	validationi (cason (r lag
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.18	J	=J	0.14	10	UG/L	InvalidLabFlag (J)
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	invariables ag (b)
Isopropanol	37	U	U	37	100	UG/L	AB>RL (none)
isopropulior	37	U	U	37	100	UG/L	EB>RL (none)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	EB* RE (Holle)
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.17	J	=J	0.17	10	UG/L	InvalidLabFlag (J)
p/m-Xylene	0.53	J	_J =J	0.23	10	UG/L	InvalidLabFlag (J)
Pentachloroethane	1.5	U	U U	1.5	10	UG/L	invandLabi iag (3)
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.16	U	U	0.16	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	15	O	O	0.17	10	UG/L	InvalidLabFlag (=)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	Eess CCE (none)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	1.1	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	3.9	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	invariables ag (b)
Vinyl Chloride	7	C	C	0.3	0.5	UG/L	
Field ID	WS08GW01	5002					
	W5000 W01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
	0.36	U	U	0.36	10	UG/L	
1,2,4-Trimethylbenzene	0.30	U	0				
1,2,4-Trimethylbenzene 1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	

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Validated Form I

Field ID WS08GW01S002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U 10 0.46 U 0.46 UG/L 1,2-Dichlorobenzene 1.2-Dichloroethane 0.24 U U 0.24 5 UG/L U 1,2-Dichloropropane 0.42 U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.3 10 UG/L U 1,4-Dichlorobenzene 0.43 U 0.43 10 UG/L 0.36 U U 0.36 5 UG/L 2,2-Dichloropropane 2-Butanone 2.2 U U 2.2 50 UG/L U U 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 25 UG/L 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L 2Cleve (R) 0.24 U U 0.24 25 2-Chlorotoluene UG/L 2.1 U U 2.1 50 UG/L 2-Hexanone U U 4-Chlorotoluene 0.13 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L 10 U 50 AB<RL (U) Acetone =J6 UG/L 10 U =J6 50 UG/L EB<RL (U) U Benzene 0.14 U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L 3.9 UJ U 3.9 25 LCS<LCL (UJ) Bromomethane UG/L c-1,2-Dichloroethene 0.48 5 UG/L InvalidLabFlag (=) 5.4 c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L U 10 Chlorobenzene 0.17 U 0.17 UG/L 2.3 U 2.3 25 Chloroethane U UG/L Chloroform U U 10 UG/L 0.46 0.46 Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane U U 25 0.46 0.46 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L Isopropanol 37 U U 37 100 UG/L AB>RL (none) U 37 U 37 100 UG/L EB>RL (none) 0.58 U 0.58 Isopropylbenzene U 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L U U 0.16 10 UG/L p-Isopropyltoluene 0.16 sec-Butylbenzene 0.25 U U 0.25 25 UG/L 0.17 U U 0.17 10 UG/L Styrene t-1,2-Dichloroethene J =J0.37 10 UG/L InvalidLabFlag (J) 0.68

mfesler

16070971 SW8260B

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Validated Form I

Field ID	WS08GW01S	WS08GW01S002								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)			
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)			
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L				
Tetrachloroethene	0.39	U	U	0.39	5	UG/L				
Toluene	0.66	J	=J	0.24	10	UG/L	InvalidLabFlag (J)			
Trichloroethene	0.71	J	=J	0.37	5	UG/L	InvalidLabFlag (J)			
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L				
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L				

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
AB <rl< td=""><td>Ambient blank concentration less than the reporting limit</td><td>Blank</td></rl<>	Ambient blank concentration less than the reporting limit	Blank
AB>RL	Ambient blank concentration greater than the reporting limit	Blank
EB <rl< td=""><td>Equipment blank concentration less than the reporting limit</td><td>Blank</td></rl<>	Equipment blank concentration less than the reporting limit	Blank
EB>RL	Equipment blank concentration greater than the reporting limit	Blank
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16070971 Method SW8260B-SIM

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dilut	tion ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2444Q001	ТВ	1		14071601 / CAQW2444Q001 / 160709
WS06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709
WS08GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Diluti	on ABLotValue	EBLotValue	TBLotValue
WATER				_
EBQW2176Q001	EB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Packa

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	WS06GW01S	8002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.86	J	= J	0.35	1	UG/L	InvalidLabFlag (J)
Field ID	WS08GW01S	8002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

No surrogates in this SDG.

Data Quality Evaluation

5. Surrogates

SDG 16070972	2 Metho	d 4500-NH3F			
Reviewer: bjone		Date:	8/8/2016	Matrix: WATER	
Reviewed:	9/2/2016				
Field Sample	s				
Field blank association	n lot values: LotNumber / Field	IID / SDG			
NativeID	QAQC Type Dilution ABLotVa	alue	EBLotValue	TBLotValue	
WATER					
RD05CGW01S006 WS04AGW01D006	N 1 Missing Associat FD 1 Missing Associat		lissing Association DP	14071601 / CAQW244 14071601 / CAQW244	
WS04AGW01B006	FD 1 Missing Associat N 1 Missing Associat		lissing Association DP lissing Association DP	14071601 / CAQW244	
Items of Intere 2. Blank Summa					
Field Blanks	No Field Blanks were four	nd.			
Method Blanks	No Method Blank detects	were found.			
3. Spikes and Duj	olicates				
Field Duplica	All acceptance criteria	were met.			
Laboratory Dupl	licates None in this SDG				
Matrix Spike	No MS's for this SDG. No	SD's for this SDG. MS	RPD: None for this SI	DG.	
4. Laboratory Co	ntrol Sample All acce	ptance criteria were met.			

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDI	DI	Lleite	Validation Dancer (Flor
7 that yes	rtoodit			MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.14			0.0086	0.05	MG/L	
Field ID	WS04AGW01	D006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.046	J	= J	0.0086	0.05	MG/L	InvalidLabFlag (J)
Field ID	WS04AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.057			0.0086	0.05	MG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

No surrogates in this SDG.

Data Quality Evaluation

5. Surrogates

SDG 16070972		Method	E300.0			
Reviewer: bjone	s7		Date	e: 8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				
Field Samples		-h / F:- HID /	SDC			
Field blank association	$\mathbf{Q}\mathbf{A}\mathbf{Q}\mathbf{C}$	iber / FleidiD /	SDG			
NativeID	Type Dilution	ABLotValue	:	EBLotValue		TBLotValue
WATER RD05CGW01S006 WS04AGW01D006 WS04AGW01S006 1. Case Narrative Items of Interes 2. Blank Summar Field Blanks Method Blanks	FD 1 Mis N 1 Mis N 1 Mis		DP DP	Missing Association DP Missing Association DP Missing Association DP	14	071601 / CAQW2444Q001 / 1607 071601 / CAQW2444Q001 / 1607 071601 / CAQW2444Q001 / 1607
3. Spikes and Dup Field Duplica Laboratory Dupli	tes All acceptar	nce criteria wei	re met.			
Matrix Spike 4. Laboratory Cor				MS RPD: None for this S met. No spike dupes in th		

16070972 E300.0

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.12			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Field ID	WS04AGW01	D006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.13			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Field ID	WS04AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.14			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	

Data Quality Evaluation

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD05CGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
RD05CGW01S006MS	MS	1		
RD05CGW01S006SD	SD	1		
WS04AGW01D006	FD	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	WS04AGW01	D006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	WS04AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	

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Validated Form I

Data Quality Evaluation

SDG 1607	70972	Method	E1625C			
Reviewer:	bjones7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
				_
WATER				
RD05CGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
SP882GGW01S005	Ν	1 Missing Association PP	Missing Association PP	14071601 / CAQW2444Q001 / 160709
WS04AGW01D006	FD	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709

1. Case Narrative
Items of Interest
No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	SP882GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	3	U	U	3	10	NG/L	
Field ID	WS04AGW01	D006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	
Field ID	WS04AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	3	U	U	3	10	NG/L	

Data Quality Evaluation

SDG 16070972 Method SW8015B

Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD05CGW01S006	N	20 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
RD05CGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
RD05CGW01S006MS	S MS	1		
RD05CGW01S006SD) SD	1		
WS04AGW01D006	FD	20 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01D006	FD	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01S006	N	20 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2444Q001	TB	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks Were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

16070972 SW8015B

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Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	48	U	U	48	50	UG/L	
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	
Field ID	WS04AGW01	D006					
	775011207701	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	
Field ID	WS04AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	

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Validated Form I

Data Quality Evaluation

SDG 16070972 Method SW8260B

Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC			
NativeID 7	Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD05CGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
SP882GGW01S005	N	1 Missing Association PP	Missing Association PP	14071601 / CAQW2444Q001 / 160709
SP882GGW01S005MS	MS	1		
SP882GGW01S005SD	SD	1		
WS04AGW01D006	FD	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709
WS04AGW01S006	Ν	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709

Associated Field Blanks (other SDGs)

QAQC		

NativeID	Type Dilution ABLotValue		EBLotValue	TBLotValue
WATER				
CAQW2444Q001	TB	1 Missing Association PP	Missing Association PP	14071601 / CAQW2444Q001 / 1607097
CAQW2444Q001	TB	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 1607097

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL; MS<LCL; SD<LCL.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

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Matrix Spike

These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - SP882GGW01S005MS), Pentachloroethane (MS - SP882GGW01S005MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - SP882GGW01S005SD), Pentachloroethane (SD - SP882GGW01S005SD). For high recoveries and sample results reported as ND, no

flagging was applied. All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD	Qualifier* Criteria
WATER		<u>2-Ch</u>	loroethyl Vinyl	<u>Ether</u>		
	SP882GGW0	1S005	1	6 UG/L	R	MS <lcl< td=""></lcl<>
	SP882GGW0	1S005	1	6 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>Pent</u>	achloroethane			
	SP882GGW0	1S005	1	.5 UG/L	none	MS>UCL
	SP882GGW0	1S005	1	.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: Bromomethane (BS), c-1,3-Dichloropropene (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	<u>Analyte</u>	Recovery	LowerLimit	UpperLimit
WATER	BS	09916246233BS	Bromomethane	68	70	120
WATER	BS	09916246233BS	c-1,3-Dichloroprope	ene 123	70	120
WATER	BS	09916246233BS	t-1,3-Dichloroprope	ene 140	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration

Initial Calibration was not examined by AutoDV.

Continuing Calibration

Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS), c-1,3-

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Dichloropropene (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG. VDMS4.32 $\,$

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	. ,
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	, ,
Chlorobenzene	0.17	U	U	0.17	10	UG/L	

Field ID	RD05CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.23	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.17	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L	ECS/UCE (Holic)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.24	U	U	0.24	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	SP882GGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
-	1.2	U	U	1.2	25	UG/L	
1,2-Dibromo-3-Chloropropane							
1,2-Dibromo-3-Chloropropane 1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
		U U	U U	0.36 0.46	10 10	UG/L UG/L	

Field ID	SP882GGW01S005							
		Final	Lab					
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L		
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L		
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L		
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L		
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L		
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L		
2-Butanone	2.2	U	U	2.2	50	UG/L		
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L		
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>	
	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>	
	16	R	U	16	25	UG/L	2Cleve (R)	
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L		
2-Hexanone	2.1	U	U	2.1	50	UG/L		
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L		
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L		
Acetone	6	U	U	6	50	UG/L		
Benzene	0.14	U	U	0.14	10	UG/L		
Bromobenzene	0.3	U	U	0.3	25	UG/L		
Bromochloromethane	0.48	U	U	0.48	25	UG/L		
Bromodichloromethane	0.21	U	U	0.21	10	UG/L		
Bromoform	0.5	U	U	0.5	25	UG/L		
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	ECS (ECL (CS)	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	Zesi e ez (none)	
Chlorobenzene	0.17	U	U	0.17	10	UG/L		
Chloroethane	2.3	U	U	2.3	25	UG/L		
Chloroform	0.46	U	U	0.46	10	UG/L		
Chloromethane	1.8	U	U	1.8	25	UG/L		
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L		
Dibromochloromethane	0.25	U	U	0.25	10	UG/L		
Dibromomethane	0.23	U	U	0.46	5	UG/L		
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L UG/L		
Ethylbenzene Ethylbenzene	0.40	U	U	0.46	10	UG/L		
Hexachloro-1,3-Butadiene	0.14	U	U			UG/L UG/L		
				0.32	25			
Isopropanol	37	U	U	37	100	UG/L		
Isopropylbenzene	0.58	U	U	0.58	10	UG/L		
Methylene Chloride	0.64	U	U	0.64	25	UG/L		
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L		
n-Butylbenzene	0.23	U	U	0.23	25	UG/L		
n-Propylbenzene	0.17	U	U	0.17	10	UG/L		
o-Xylene	0.23	U	U	0.23	10	UG/L		
p/m-Xylene	0.3	U	U	0.3	10	UG/L	ap ****	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	SD>UCL (none)	
	1.5	U	U	1.5	10	UG/L	MS>UCL (none)	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L		
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L		
Styrene	0.17	U	U	0.17	10	UG/L		
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L		
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)	

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Field ID	SP882GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	, ,
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.37	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	0.37	U	U	0.37	5	UG/L	•
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	WS04AGW01	D006					
	WS04AGW01	Final	Lab				
Analyta	Result	Flag	Flag				
Analyte	Resuit	ı iug	ı iug	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.14	U	U	0.14	25	UG/L	
Bromochloromethane	0.3	U	U	0.3	25	UG/L UG/L	
Bromodichloromethane	0.48	U	U	0.48	10	UG/L UG/L	
Bromoform	0.21	U	U	0.21	25	UG/L UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L UG/L	LCD\LCL (UI)
	0.48	U	U		10		LCS>UCL (none)
c-1,3-Dichloropropene Carbon Tetrachloride	0.25	U	U	0.25	10	UG/L	LC3>UCL (none)

Field ID	WS04AGW01						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	validationi\teason (i lag
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.23	U	U	0.23	5	UG/L UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L UG/L	
Ethylbenzene	0.40	U	U	0.40	10	UG/L UG/L	
•							
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	WS04AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDI	DI	I balka	Validation Decree (Flor
•				MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
-,-,:,						****	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
•	1.2 0.36	U U	U U	1.2 0.36	25 10	UG/L UG/L	

Field ID WS04AGW01S006 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 0.24 U U 5 UG/L 1,2-Dichloroethane 0.24 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L U 1,3,5-Trimethylbenzene 0.28 U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.3 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L U U 5 2,2-Dichloropropane 0.36 0.36 UG/L 2.2 U U 50 UG/L 2-Butanone 2.2 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L R U 2-Chloroethyl Vinyl Ether 16 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L U U 50 2-Hexanone 2.1 2.1 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L U U 4-Methyl-2-Pentanone 4.4 4.4 25 UG/L Acetone 6 U U 6 50 UG/L 0.14 U U 0.14 10 UG/L Benzene Bromobenzene 0.3 U U 0.3 25 UG/L U Bromochloromethane 0.48 U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L Bromomethane 3.9 UJ U 3.9 25 UG/L LCS<LCL (UJ) c-1,2-Dichloroethene 0.48 U U 0.48 5 UG/L c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L U Chlorobenzene 0.17 U 0.17 10 UG/L Chloroethane 2.3 U U 2.3 25 UG/L U U 10 Chloroform 0.46 0.46 UG/L Chloromethane U U 25 1.8 1.8 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L Isopropanol 37 U U 37 100 UG/L Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) U U 0.31 25 0.31 UG/L n-Butylbenzene U U 25 0.23 0.23 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L 10 p/m-Xylene 0.3 U U 0.3 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) tert-Butylbenzene 0.28 U U 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L

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Field ID	WS04AGW01S006							
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)	
Toluene	0.24	U	U	0.24	10	UG/L		
Trichloroethene	0.37	U	U	0.37	5	UG/L		
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L		
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L		

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

Data Quality Evaluation

SDG 16070972 Method SW8260B-SIM

Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC				
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue	
				_	
WATER					
RD05CGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709	
SP882GGW01S005	N	1 Missing Association PP	Missing Association PP	14071601 / CAQW2444Q001 / 160709	
WS04AGW01D006	FD	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709	
WS04AGW01S006	N	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 160709	

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilution ABLotValue		EBLotValue	TBLotValue	
WATER					
CAQW2444Q001	TB	1 Missing Association PP	Missing Association PP	14071601 / CAQW2444Q001 / 1607097	
CAQW2444Q001	TB	1 Missing Association DP	Missing Association DP	14071601 / CAQW2444Q001 / 1607097	

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness P

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDI	Б.	11. %	V 11.1 (1. D. (F)
Analyte	rtesuit	9		MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	SP882GGW01	1S005					
		Final	Lab				
Analyte	Result	Flag	Flag				
Analyte	Result	9	9	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	WS04AGW01	D006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.59	J	= J	0.35	1	UG/L	InvalidLabFlag (J)
Field ID	WS04AGW01	S006					
		Final	Lab				
A I+ -	Decult	Flag	Flag				
Analyte	Result	i iay	i iay	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.61	J	=J	0.35	1	UG/L	InvalidLabFlag (J)
							0 ()

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Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

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All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

SDG 16070972	2	Method	SW8270C-SIM			
Reviewer: bjone	es7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association		mber / FieldID / Sl	DG			
NativeID	QAQC Type Dilution	ABLotValue	El	BLotValue		TBLotValue
WATER WS04AGW01D006 WS04AGW01S006		ssing Association DP		g Association DP g Association DP		14071601 / CAQW2444Q001 / 16070 14071601 / CAQW2444Q001 / 16070
 Case Narrative Items of Interes Blank Summan 	st No items	of concern.				
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	nk detects were f	ound.			
3. Spikes and Dup Field Duplica		nce criteria were	met.			
Laboratory Dupl		n this SDG				
Matrix Spike		s SDG. No SD's	for this SDG. MS RP	D: None for this SI	DG.	
4. Laboratory Co.	ntrol Sample	All acceptance	e criteria were met.			

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6. Tuning and Mass **Calibration**

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

Form I Review: No samples were excluded for dilutions or re-extractions. **General Comments**

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions. **Interest**

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	WS04AGW011	D006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Bis(2-Ethylhexyl) Phthalate	0.11	J	=J	0.047	9.6	UG/L	InvalidLabFlag (J)
Butyl Benzyl Phthalate	0.077	J	=J	0.051	9.6	UG/L	InvalidLabFlag (J)
Diethyl Phthalate	0.051	U	U	0.051	9.6	UG/L	
Dimethyl Phthalate	0.044	U	U	0.044	9.6	UG/L	
Di-n-Butyl Phthalate	0.077	U	U	0.077	9.6	UG/L	
Di-n-Octyl Phthalate	0.046	U	U	0.046	9.6	UG/L	
Field ID		G00 6					
	WS04AGW01	8006					
Analyte	WS04AGW019	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
		Final		MDL 0.046	RL 9.4	Units UG/L	ValidationReason (Flag
Analyte	Result	Final Flag	Flag				•
Analyte Bis(2-Ethylhexyl) Phthalate	Result	Final Flag	Flag =J	0.046	9.4	UG/L	InvalidLabFlag (J)
Analyte Bis(2-Ethylhexyl) Phthalate Butyl Benzyl Phthalate	0.093 0.072	Final Flag J	Flag =J =J	0.046 0.05	9.4 9.4	UG/L UG/L	InvalidLabFlag (J)
Analyte Bis(2-Ethylhexyl) Phthalate Butyl Benzyl Phthalate Diethyl Phthalate	Result 0.093 0.072 0.05	Final Flag J J U	Flag =J =J U	0.046 0.05 0.05	9.4 9.4 9.4	UG/L UG/L UG/L	InvalidLabFlag (J)

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Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

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All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

							<u> </u>
SDG	16070972		Method	SW8330A			
Review	ver: bjone	s7		Date:	8/8/2016	Matrix:	WATER
Reviewed	l:	9/2/2016	_				
	d Samples		where / Einhald D. /	000			
Fleid bi		lot values: LotNur	nber / FleidiD /	SDG			
Nativel		QAQC Type Dilution	ABLotValue	;	EBLotValue	7	ΓBLotValue
WATE	R						
	GW01S006	N 1 Mis	sing Association [OP .	Missing Association DP	140)71601 / CAQW2444Q001 / 1607
WS04/	AGW01D006	FD 1 Mis	sing Association [OP	Missing Association DP	140	071601 / CAQW2444Q001 / 1607
WS04A	\GW01S006	N 1 Mis	ssing Association [OP .	Missing Association DP	140)71601 / CAQW2444Q001 / 1607
Iten	e Narrative ns of Interes nk Summan	st	of concern.				
Field	Blanks	No Field Blank	s were found.				
Metho	od Blanks	No Method Bla	nk detects wer	e found.			
3. Spik	xes and Dup	licates					
Fi	ield Duplica	tes All accepta	nce criteria we	re met.			
Labor	atory Dupl	icates None in	n this SDG				
Matrix	x Spike	No MS's for thi	s SDG. No SI	D's for this SDG. M	AS RPD: None for this SI	DG.	
4. Lab	oratory Co	ntrol Sample	All acceptar	nce criteria were m	et.		

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6. Tuning and Mass **Calibration**

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

11. Summary

10. Confirmation

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

None for this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.046	U	U	0.046	1	UG/L	, ,
1,3-Dinitrobenzene	0.052	U	U	0.052	1	UG/L	
2,4,6-Trinitrotoluene	0.027	U	U	0.027	1	UG/L	
2,4-Dinitrotoluene	0.04	U	U	0.04	1	UG/L	
2,6-Dinitrotoluene	0.054	U	U	0.054	1	UG/L	
2-Amino-4,6-DNT	0.062	U	U	0.062	1	UG/L	
2-Nitrotoluene	0.041	U	U	0.041	1	UG/L	
3-Nitrotoluene	0.048	U	U	0.048	1	UG/L	
4-Amino-2,6-DNT	0.055	U	U	0.055	1	UG/L	
4-Nitrotoluene	0.055	U	U	0.055	1	UG/L	
HMX	0.048	U	U	0.048	1	UG/L	
Nitrobenzene	0.057	U	U	0.057	1	UG/L	
RDX	0.061	U	U	0.061	1	UG/L	
Tetryl	0.069	U	U	0.069	1	UG/L	
Field ID	THICOAA CHHIO1	D004					
1 1014 15	WS04AGW01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.051	U	U	0.051	1.1	UG/L	
1,3-Dinitrobenzene	0.057	U	U	0.057	1.1	UG/L	
2,4,6-Trinitrotoluene	0.029	U	U	0.029	1.1	UG/L	
2,4-Dinitrotoluene	0.044	U	U	0.044	1.1	UG/L	
2,6-Dinitrotoluene	0.059	U	U	0.059	1.1	UG/L	
2-Amino-4,6-DNT	0.068	U	U	0.068	1.1	UG/L	
2-Nitrotoluene	0.045	U	U	0.045	1.1	UG/L	
3-Nitrotoluene	0.052	U	U	0.052	1.1	UG/L	
4-Amino-2,6-DNT	0.061	U	U	0.061	1.1	UG/L	
4-Nitrotoluene	0.06	U	U	0.06	1.1	UG/L	
HMX	0.052	U	U	0.052	1.1	UG/L	
Nitrobenzene	0.063	U	U	0.063	1.1	UG/L	
RDX	0.067	U	U	0.067	1.1	UG/L	
Tetryl	0.076	U	U	0.076	1.1	UG/L	
Field ID	WC044 CW04	C004					
	WS04AGW01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
•							
1,3,5-Trinitrobenzene	0.047	U	U	0.047	1.1	UG/L	

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Field ID	WS04AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
2,4,6-Trinitrotoluene	0.027	U	U	0.027	1.1	UG/L	
2,4-Dinitrotoluene	0.041	U	U	0.041	1.1	UG/L	
2,6-Dinitrotoluene	0.055	U	U	0.055	1.1	UG/L	
2-Amino-4,6-DNT	0.064	U	U	0.064	1.1	UG/L	
2-Nitrotoluene	0.042	U	U	0.042	1.1	UG/L	
3-Nitrotoluene	0.049	U	U	0.049	1.1	UG/L	
4-Amino-2,6-DNT	0.056	U	U	0.056	1.1	UG/L	
4-Nitrotoluene	0.056	U	U	0.056	1.1	UG/L	
HMX	0.048	U	U	0.048	1.1	UG/L	
Nitrobenzene	0.059	U	U	0.059	1.1	UG/L	
RDX	0.063	U	U	0.063	1.1	UG/L	
Tetryl	0.07	U	U	0.07	1.1	UG/L	

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Data Quality Evaluation

						<u></u>
SDG 16070972	2	Method	SW9040C			
Reviewer: bjone	es7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples		ımber / FieldID /	SDG			
NativeID	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER RD05CGW01S006	N 1 M	issing Association [)P	Missing Association DP	1.	4071601 / CAQW2444Q001 / 16070
1. Case Narrative Items of Intere	No itomo	s of concern.				
2. Blank Summa	ry					
Field Blanks	No Field Blank	ks were found.				
Method Blanks	No Method Bl	anks were found	1.			
3. Spikes and Dup	olicates					
Field Duplica	ntes No FD As	sociated.				
Laboratory Dupl	icates None	in this SDG				
Matrix Spike	No MS's for th	is SDG. No SE	o's for this SDG. M	S RPD: None for this S	DG.	
4. Laboratory Co	ntrol Sample	No spikes in	this SDG. No spi	ke dupes in this SDG.		
5. Surrogates	No surre	ogates in this SI	OG.			
6. Tuning and Ma Calibration	nss N/A					

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7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01S	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pН	7.27		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071078 Method E300.0

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

8/31/2016 Reviewed:

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2176Q001	EB	1	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	1 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006MS	MS	1		
HAR05GW01S006SD	SD	1		
HAR06GW01S002	N	5 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 160710
HAR06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	5 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710
RD47GW01S003	Ν	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilu	ntion ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2174Q001	EB	1 09081601 / FBQW1833Q001 / 160806	70 09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 160806	70 15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 160806	70 09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative **Items of Interest**

No items of concern.

2. Blank Summary

Method Blanks

No Field Blank detects were found. **Field Blanks** No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass

7. Internal Standard

N/A

Calibration

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding TimeAll acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR05GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Chloride	19			0.52	1	MG/L	
Fluoride	0.22			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	45			0.27	1	MG/L	
Field ID	HAR06GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Chloride	0.52	U	U	0.52	1	MG/L	
Fluoride	0.32			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	270		=D	1.3	5	MG/L	InvalidLabFlag (=)
Field ID	RD47GW018	003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
Chloride	40			0.52	1	MG/L	
Fluoride	0.2			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	320		=D	1.3	5	MG/L	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071078 **Method** E1625C

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dilut	ion ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2176Q001	EB	1	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	1 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilutio	n ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2174Q001	EB 1	09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB 1	09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB 1	09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR05GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	HAR06GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	
Field ID	RD47GW018	5003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	3	U	U	3	10	NG/L	

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071078 **Method SW8015B**

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	llution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2445Q001	TB	1		15071601 / CAQW2445Q001 / 160710
EBQW2176Q001	EB	20	15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 160710
EBQW2176Q001	EB	1	15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	20 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	1 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR06GW01S002	N	20 09081601 / FBQW1833	Q001 / 16080670 09081601 / EBQW2174Q001	/ 16080670 15071601 / CAQW2445Q001 / 160710
HAR06GW01S002	N	1 09081601 / FBQW1833	Q001 / 16080670	/ 16080670 15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	20 09081601 / FBQW1833	Q001 / 16080670 15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	1 09081601 / FBQW1833	Q001 / 16080670 15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

	QAQC			
NativeID	Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2174Q001	EB	20 09081601 / FBQW1833Q00	1 / 16080670 09081601 / EBQW2174Q001	/ 16080670 15071601 / CAQW2445Q001 / 1607107
EBQW2174Q001	EB	1 09081601 / FBQW1833Q00	1 / 16080670 09081601 / EBQW2174Q001	/ 16080670 15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	20 09081601 / FBQW1833Q00	1 / 16080670 15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	20 09081601 / FBQW1833Q00	1 / 16080670 09081601 / EBQW2174Q001	/ 16080670 15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q00	1 / 16080670 15071601 / EBQW2176Q001	/ 042NG 15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q00	1 / 16080670 09081601 / EBQW2174Q001	/ 16080670 15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

16071078 SW8015B

Page 2 of 4

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR05GW01	S006					
	D 1	Final Flag	Lab Flag				
Analyte	Result	ı iay	ı iay	MDL	RL	Units	ValidationReason (Flag)
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	50	U	U	8	50	UG/L	
Field ID	HAR06GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	50	U	U	8	50	UG/L	
Field ID	RD47GW018	5003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	11	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	9.7	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	21	J	=J	8	50	UG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071078 **Method SW8260B**

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

(QAQC			
NativeID	Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2445Q001	TB	1		15071601 / CAQW2445Q001 / 160710
EBQW2176Q001	EB	1	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	1 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR05GW01S006MS	MS	1		
HAR05GW01S006SD	SD	1		
HAR06GW01S002	N	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Diluti	ion ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2174Q001	EB	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks These analytes had Blank detects: Acetone (AB), Acetone (EB), Isopropanol (AB), Isopropanol

(EB). No flagging applied

Method Blanks No Method Blank detects were found.

Blank	Type Blank ID	Analyte	Result	ReportLimit	LabFlag	<u>Units</u>	SDG
AB	FBQW1833Q001	Acetone	7.3	50	= J	UG/L	16080670
AB	FBQW1833Q001	Isopropanol	110	100		UG/L	16080670
EB	EBQW2176Q001	Acetone	7.7	50	= J	UG/L	16071078
EB	EBQW2176Q001	Isopropanol	210	100		UG/L	16071078

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - HAR05GW01S006MS).

These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - HAR05GW01S006SD).

All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>2-Cł</u>	nloroethyl Vinyl	<u>Ether</u>		
	HAR05GW01	S006	1	6 UG/L	UJ	MS <lcl< td=""></lcl<>
	HAR05GW01	S006	1	16 UG/L	UJ	SD <lcl< td=""></lcl<>

4. Laboratory Control Sample These LCS analytes were out of control: Bromomethane (BS). No spike dupes in this SDG.

Matrix	rix OAOC Type Field ID		Analyte	Recovery	LowerLimit	<u>UpperLimit</u>	
WATER	BS	09916246234BS	Bromomethane	60	70	120	

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Blanks: These analytes had Blank detects: Acetone (AB), Acetone (EB), Isopropanol (AB),

Isopropanol (EB).

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

16071078 SW8260B

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Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

1,1,1,2-Tertachloroethane	Field ID	HAR05GW01	S006					
1.1,1.2-Tetrachloroethane								
1,1,1-Trichloroethane	Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,2,2-Tetrachloroethane	1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,2-Trichloro-thane	1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2-Trichloroethane	1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1-Dichloroethane	1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1-Dichloroptopene	1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloropropene 0.46 U U 0.46 10 UG/L 1,2,3-Trichloropenzene 0.51 U U 0.51 25 UG/L 1,2,3-Trichloropropane 0.64 U U 0.65 25 UG/L 1,2,4-Trinethylbenzene 0.36 U U 0.36 10 UG/L 1,2,4-Trimethylbenzene 0.36 U U 0.36 10 UG/L 1,2-Dichlorobenzene 0.36 U U 0.36 10 UG/L 1,2-Dichlorobenzene 0.46 U U 0.36 10 UG/L 1,2-Dichlorobenzene 0.46 U U 0.46 10 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.43 10 UG/L 2,2-Dichloropropane <	1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,2,3-Trichlorobenzene	1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,2,3-Trichloropropane	1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,4-Trinchlorobenzene	1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,4-Trimethylbenzene	1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2-Dibromo-3-Chloropropane	1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2-Dibromoethane 0.36 U U 0.36 10 UG/L 1,2-Dichloroebnzene 0.46 U U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichloropropane 0.3 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.43 10 UG/L 1,4-Dichloropropane 0.36 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloroeltyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene</lcl></lcl>	1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene 0.46 U U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.43 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2,2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L 2-Chlorothyl Vinyl Ether 16 R U 16 25 UG/L MS <lcl (ui)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2Cleve (R) <</lcl>	1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.43 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2,2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L MS<lcl (uj)<="" td=""> 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Methyl-</lcl></lcl>	1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.3 10 UG/L 1,4-Dichloropenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.5 UG/L 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (ui)<="" td=""> 16 R U 16 25 UG/L MS<lcl (ui)<="" td=""> 2-Chloroethyl Vinyl Ether 16 R U 0 0.24 U U 0.24 U U 0.24 U U 0.24 U UG/L D D <</lcl></lcl>	1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L 1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.33 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chlorothyl Vinyl Ether 16 R U 16 25 UG/L 2-Chlorotoluene 16 R U 16 25 UG/L MS <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 6<td>1,2-Dichloroethane</td><td>0.24</td><td>U</td><td>U</td><td>0.24</td><td>5</td><td>UG/L</td><td></td></lcl></lcl>	1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,3-Dichlorobenzene 0.4 U U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.3 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chlorothyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2Cleve (R) 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L 4-Methyl-2-Pentanone</lcl></lcl></lcl></lcl>	1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3-Dichloropropane 0.3 U U 0.3 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L 2-Chlorothyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2Cleve (R) 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Benzene 0.</lcl></lcl></lcl></lcl>	1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,4-Dichlorobenzene	1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
2,2-Dichloropropane 0.36 U U 0.36 5 UG/L 2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2Cleve (R) 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 0.14 10 UG/L 10 UG/L 4-Methyl-2-Pentanone 0.14 U<td>1,3-Dichloropropane</td><td>0.3</td><td>U</td><td>U</td><td>0.3</td><td>10</td><td>UG/L</td><td></td></lcl></lcl></lcl>	1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
2-Butanone 2.2 U U 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L MS <lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U</lcl></lcl>	1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2-Chloro-1,1,1-trifluoroethane 2.1 U U 2.1 25 UG/L SD <lcl (uj)<="" th=""> 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L SD<lcl (uj)<="" td=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" td=""> 16 R U 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 0.13 25 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 0 0 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromoform 0.5 U<</lcl></lcl></lcl>	2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L SD <lcl (uj)<="" th=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" th=""> 16 R U 16 25 UG/L MS<lcl (uj)<="" th=""> 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L</lcl></lcl></lcl>	2-Butanone	2.2	U	U	2.2	50	UG/L	
16 R U 16 25 UG/L MS <lcl (uj)<="" th=""> 16 R U 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L</lcl>	2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
16 R U 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.48 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromoform 0.5 U U 0.5 25 UG/L	2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	SD <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene 0.24 U U 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromoform 0.5 U U 0.5 25 UG/L		16	R	U	16	25	UG/L	MS <lcl (uj)<="" td=""></lcl>
2-Hexanone 2.1 U U 2.1 50 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromoform 0.5 U U 0.5 25 UG/L		16	R	U	16	25	UG/L	2Cleve (R)
4-Chlorotoluene 0.13 U U 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromoform 0.5 U U 0.5 25 UG/L	2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	2-Hexanone	2.1	U	U	2.1	50	UG/L	
Acetone 6 U U 6 50 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	Acetone	6	U	U	6	50	UG/L	
Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	Benzene	0.14	U	U	0.14	10	UG/L	
Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L	Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromoform 0.5 U U 0.5 25 UG/L	Bromochloromethane	0.48	U	U	0.48	25	UG/L	
	Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
	Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane 3.9 UJ U 3.9 25 UG/L LCS <lcl (uj)<="" td=""><td>Bromomethane</td><td>3.9</td><td>UJ</td><td>U</td><td>3.9</td><td>25</td><td>UG/L</td><td>LCS<lcl (uj)<="" td=""></lcl></td></lcl>	Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene 0.48 U U 0.48 5 UG/L	c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L	c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	

Field ID	HAR05GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	75	J	=J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	invandenting (5)
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.23	U	U	0.23	10	UG/L	
o-Xylene	0.17	U	U	0.17	10	UG/L UG/L	
	0.23	U	U	0.23	10	UG/L UG/L	
p/m-Xylene Pentachloroethane	1.5	U	U	1.5	10	UG/L UG/L	
	0.16			0.16	10	UG/L UG/L	
p-Isopropyltoluene		U	U				
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene t-1,2-Dichloroethene	0.17 0.37	U U	U U	0.17 0.37	10 10	UG/L UG/L	
	0.37	U	U	0.37	10	UG/L UG/L	
t-1,3-Dichloropropene							
tert-Butylbenzene Tetrachloroethene	0.28	U	U	0.28	25	UG/L	
	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane Vinyl Chloride	1.7 0.3	U U	U U	1.7 0.3	25 0.5	UG/L UG/L	
v in yr Chloride		C	C	0.5	0.5	0.0/12	
Field ID	HAR06GW01						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	1.5	J	=J	0.28	10	UG/L	InvalidLabFlag (J)
1,1-Dichloroethene	16	J	_J =J	0.43	25	UG/L	InvalidLabFlag (J)
	0.46	U	U	0.46	10	UG/L	
1.1-Dichioropropene	0.51	U	U	0.51	25	UG/L	
1,1-Dichloropropene 1,2.3-Trichlorobenzene		-				UG/L	
1,2,3-Trichlorobenzene		IJ	U	0.64		U/U/I/	
1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	0.64	U U	U U	0.64 0.5	5 25		
1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.64 0.5	U	U	0.5	25	UG/L	
1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	0.64						

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Field ID	HAR06GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	AB <rl (none)<="" td=""></rl>
Benzene	0.14	U	U	0.14	10	UG/L	(44444)
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	3.9	J	=J	0.48	5	UG/L	InvalidLabFlag (J)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	invandLabi lag (3)
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.23	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L UG/L	
Ethylbenzene	0.46	U	U	0.46	10	UG/L	
Hexachloro-1,3-Butadiene	0.14	U	U	0.14	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L UG/L	ADS DI (nons)
Isopropylbenzene	0.58	U	U	0.58		UG/L UG/L	AB>RL (none)
Methylene Chloride	0.58	U	U	0.58	10	UG/L UG/L	
•					25 25		
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25 25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	Installation (I)
t-1,2-Dichloroethene	0.48	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	

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Field ID	HAR06GW01	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.35	J	= J	0.3	0.5	UG/L	InvalidLabFlag (J)
Field ID	RD47GW018	5003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	ramaanom toacom (r tag
1,1,1-Trichloroethane	0.4	U	U	0.4	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.3	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.41	U	U	0.41	25	UG/L UG/L	
1,1,2-Trichloroethane	0.43	U	U	0.43	10	UG/L	
1,1-Dichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethene	0.23	U	U	0.23	25	UG/L	
1,1-Dichloropropene	0.45	U	U	0.45	10	UG/L	
1,2,3-Trichlorobenzene	0.40	U	U	0.40	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.40	U	U	0.40	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.42	U	U	0.42	10	UG/L	
1,3-Dichlorobenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.4	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.43	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	zcieve (K)
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	EB <rl (none)<="" td=""></rl>
rectone	6	U	U	6	50	UG/L	AB <rl (none)<="" td=""></rl>
Benzene	0.14	U	U	0.14	10	UG/L	AD (Holic)
Bromobenzene	0.14	U	U	0.14	25	UG/L UG/L	
Bromochloromethane	0.3	U	U	0.3	25	UG/L UG/L	
Bromodichloromethane	0.48	U	U	0.48	10	UG/L UG/L	
Bromoform	0.21	U	U	0.21	25	UG/L UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L UG/L	LCS\LCL (UI)
	0.48	U	U	0.48	5 10		
c-1,3-Dichloropropene Carbon Tetrachloride	0.25	U	U	0.25	0.5	UG/L UG/L	

mfesler

Vinyl Chloride

0.3

U

U

0.3

0.5

UG/L

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Validated Form I

Field ID RD47GW01S003 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 0.17 U U 0.17 10 UG/L Chlorobenzene Chloroethane 2.3 U U 2.3 25 UG/L U 0.46 U 0.46 10 UG/L Chloroform Chloromethane 1.8 U U 1.8 25 UG/L U Chlorotrifluoroethylene 1.8 U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L 5 0.46 U U 0.46 UG/L Dibromomethane Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L Isopropanol 37 U U 37 100 UG/L AB>RL (none) 37 U U 37 100 UG/L EB>RL (none) Isopropylbenzene 0.58 U U 0.58 10 UG/L U U Methylene Chloride 0.64 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L 0.17 U U 0.17 10 UG/L n-Propylbenzene 0.23 U U 0.23 10 UG/L o-Xylene p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L U U 10 UG/L Styrene 0.17 0.17 t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L 0.25 U U 0.25 10 UG/L t-1,3-Dichloropropene tert-Butylbenzene 0.28 U U 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 0.37 U U 0.37 5 UG/L Trichlorofluoromethane 1.7 U U 25 UG/L 1.7

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
AB <rl< td=""><td>Ambient blank concentration less than the reporting limit</td><td>Blank</td></rl<>	Ambient blank concentration less than the reporting limit	Blank
AB>RL	Ambient blank concentration greater than the reporting limit	Blank
EB <rl< td=""><td>Equipment blank concentration less than the reporting limit</td><td>Blank</td></rl<>	Equipment blank concentration less than the reporting limit	Blank
EB>RL	Equipment blank concentration greater than the reporting limit	Blank
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071078 **Method SW8260B-SIM**

Reviewer: bjones7 Date: 8/23/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2445Q001	TB	1		15071601 / CAQW2445Q001 / 160710
EBQW2176Q001	EB	1	15071601 / EBQW2176Q001 / 04	2NG 15071601 / CAQW2445Q001 / 160710
HAR05GW01S006	N	1 Missing Association DP	Missing Association DP	15071601 / CAQW2445Q001 / 160710
HAR06GW01S002	N	1 09081601 / FBQW1833Q001 / 16	080670 09081601 / EBQW2174Q001 / 16	080670 15071601 / CAQW2445Q001 / 160710
RD47GW01S003	N	1 09081601 / FBQW1833Q001 / 16	080670 15071601 / EBQW2176Q001 / 04	2NG 15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Diluti	on ABLotValue	EBLotValue	TBLotValue
WATER				
EBQW2174Q001	EB ·	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	15071601 / EBQW2176Q001 / 042NG	15071601 / CAQW2445Q001 / 1607107
FBQW1833Q001	AB	1 09081601 / FBQW1833Q001 / 16080670	09081601 / EBQW2174Q001 / 16080670	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

16071078 SW8260B-SIM

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Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR05GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	HAR06GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	1.7			0.35	1	UG/L	
Field ID	RD47GW01S	5003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	

Validated Form I

Data Quality Evaluation

Calibration

SDG 16071080	Method	4500-NH3F			
Reviewer: bjone	s7	Date:	8/8/2016	Matrix: WATER	
Reviewed:	9/2/2016				
Field Samples Field blank association	lot values: LotNumber / FieldID /	SDG			
NativeID	QAQC Type Dilution ABLotValue	E	BLotValue	TBLotValue	
WATER HAR05GW01S006	N 1 Missing Association D	DP Missir	ng Association DP	15071601 / CAQW2445	Q001 / 1607
1. Case Narrative Items of Interes	No items of concern.				
2. Blank Summar	y				
Field Blanks	No Field Blanks were found.				
Method Blanks	No Method Blank detects were	e found.			
3. Spikes and Dup Field Duplica	licates tes No FD Associated.				
Laboratory Dupli	cates None in this SDG				
Matrix Spike	No MS's for this SDG. No SD	s for this SDG. MS RP	PD: None for this SD	OG.	
4. Laboratory Cor	atrol Sample All acceptan	ce criteria were met.			
5. Surrogates	No surrogates in this SE	OG.			
6. Tuning and Ma	ss _{N/A}				

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7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

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Validated Form I

Final Data Flags*

Field ID	HAR05GW01S	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Ammonia (as N)	0.025	J	= J	0.0086	0.05	MG/L	InvalidLabFlag (J)

Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

5. Surrogates

No surrogates in this SDG.

SDG 16071080		Method	E314				
Reviewer: bjone	s7			Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	-					
Field Samples							
Field blank association	lot values: LotNun	nber / FieldID /	SDG				
	QAQC Type Dilution	ABLotValue	;	EI	BLotValue		TBLotValue
WATER							
HAR05GW01S006 HAR05GW01S006MS HAR05GW01S006SD	N 1 Mis MS 1 SD 1	sing Association [P	Missin	g Association DP		15071601 / CAQW2445Q001 / 16071
1. Case Narrative Items of Interes	t No items o	of concern.					
2. Blank Summar	\mathbf{y}						
Field Blanks	No Field Blanks	s were found.					
Method Blanks	No Method Blan	nk detects were	e found.				
3. Spikes and Dup	licates						
Field Duplica	tes No FD Asso	ociated.					
Laboratory Dupli	cates None in	this SDG					
Matrix Spike	All MS acceptar acceptance crite		re met. Al	ll SD acceptanc	e criteria were me	t. All RPD	
4. Laboratory Cor	ntrol Sample	All acceptar	nce criteria	were met. No	spike dupes in thi	s SDG.	

16071080 E314

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

Field ID	HAR05GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	

Data Quality Evaluation

Calibration

SDG 16071080		Method	E1625C			
Reviewer: bjones	s7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				
Field Samples Field blank association		nber / FieldID /	SDG			
	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER SP882BGW01S004	N 1 Mis	sing Association F	PP Mi	ssing Association PP	1:	5071601 / CAQW2445Q001 / 1607
1. Case Narrative Items of Interes	t No items of	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Blan	nk detects were	e found.			
3. Spikes and Dupi Field Duplica		ociated.				
Laboratory Dupli Matrix Spike			's for this SDG. MS	RPD: None for this SD	OG.	
4. Laboratory Con	ntrol Sample	All acceptan	ce criteria were met.			
5. Surrogates	All accep	tance criteria v	vere met.			
6. Tuning and Mas	SS Tuning	g and Mass Cal	ibration were not exa	mined by AutoDV.		

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	SP882BGW01	S004					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	

Validated Form I

Data Quality Evaluation

SDG 16071080 **Method SW8260B**

Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 _____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC

NativeID Type Dilution ABLotValue EBLotValue TBLotValue

WATER

SP882BGW01S004 N 1 Missing Association PP Missing Association PP 15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilu	tion ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2445Q001	TB	1 Missing Association PP	Missing Association PP	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample These LCS analytes were out of control: Bromomethane (BS). No spike dupes in this SDG.

Matrix QAQC Type Field ID Analyte Recovery LowerLimit UpperLimit

16071080 SW8260B

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WATER BS 09916246234BS Bromomethane 60 70 120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS). No spike

dupes in this SDG.

VDMS4.32. Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project

use.

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	SP882BGW01	S004					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	

mfesler

Vinyl Chloride

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Validated Form I

Field ID SP882BGW01S004 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 2.3 U U 2.3 25 UG/L Chloroethane Chloroform 0.46 U U 0.46 10 UG/L U 1.8 U 1.8 UG/L Chloromethane 25 Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L U U Dibromochloromethane 0.25 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L U Ethylbenzene 0.14 U 0.14 10 UG/L Hexachloro-1,3-Butadiene U 0.32 U 0.32 25 UG/L 37 U U 37 100 UG/L Isopropanol Isopropylbenzene 0.58 U U 0.58 10 UG/L U U 25 Methylene Chloride 0.64 0.64 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L U U n-Butylbenzene 0.23 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L 0.3 U U 0.3 10 UG/L p/m-Xylene Pentachloroethane 1.5 U U 1.5 10 UG/L U p-Isopropyltoluene 0.16 U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L 0.25 U U 0.25 10 UG/L t-1,3-Dichloropropene tert-Butylbenzene 0.28 U U 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 0.37 U U 0.37 5 UG/L Trichlorofluoromethane 1.7 U U 1.7 25 UG/L

U

U

0.3

0.5

UG/L

0.3

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous

Data Quality Evaluation

SDG 16071080 Method SW8260B-SIM

Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC

NativeID Type Dilution ABLotValue EBLotValue TBLotValue

WATER

SP882BGW01S004 N 1 Missing Association PP Missing Association PP 15071601 / CAQW2445Q001 / 160710

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilu	ation ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2445Q001	ТВ	1 Missing Association PP	Missing Association PP	15071601 / CAQW2445Q001 / 1607107

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

16071080 SW8260B-SIM

Page 2 of 4

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

Field ID	SP882BGW01	S004					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1.4-Diovane	0.35	II	II	0.35	1	LIG/I	

Validated Form I

Data Quality Evaluation

						_
SDG 16071080		Method	SW8330A			
Reviewer: bjones	7		Date	e: 8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association	ot values: LotNur	mber / FieldID /	SDG			
	AQC Type Dilution	ABLotValue	:	EBLotValue		TBLotValue
WATER HAR05GW01S006	N 1 Mis	ssing Association [)P	Missing Association DP	15	071601 / CAQW2445Q001 / 16071
1. Case Narrative Items of Interest	No items	of concern.				
2. Blank Summary	Į.					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	ink detects were	e found.			
3. Spikes and Dupl	icates					
Field Duplicat	es No FD Ass	ociated.				
Laboratory Duplic	cates None in	n this SDG				
Matrix Spike	No MS's for thi	s SDG. No SD	D's for this SDG.	MS RPD: None for this S	DG.	
4. Laboratory Con	trol Sample	All acceptar	nce criteria were r	net.		
5. Surrogates	All accep	otance criteria v	were met.			
6. Tuning and Mas	s _{N/A}					

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR05GW01	S006						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag	
1,3,5-Trinitrobenzene	0.049	U	U	0.049	1.1	UG/L		
1,3-Dinitrobenzene	0.055	U	U	0.055	1.1	UG/L		
2,4,6-Trinitrotoluene	0.028	U	U	0.028	1.1	UG/L		
2,4-Dinitrotoluene	0.042	U	U	0.042	1.1	UG/L		
2,6-Dinitrotoluene	0.057	U	U	0.057	1.1	UG/L		
2-Amino-4,6-DNT	0.066	U	U	0.066	1.1	UG/L		
2-Nitrotoluene	0.043	U	U	0.043	1.1	UG/L		
3-Nitrotoluene	0.051	U	U	0.051	1.1	UG/L		
4-Amino-2,6-DNT	0.059	U	U	0.059	1.1	UG/L		
4-Nitrotoluene	0.058	U	U	0.058	1.1	UG/L		
HMX	0.05	U	U	0.05	1.1	UG/L		
Nitrobenzene	0.061	U	U	0.061	1.1	UG/L		
RDX	0.065	U	U	0.065	1.1	UG/L		
Tetryl	0.073	U	U	0.073	1.1	UG/L		

Validated Form I

Data Quality Evaluation

5. Surrogates

No surrogates in this SDG.

SDG 16071080		Method	SW9040C			
Reviewer: bjones	s7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association		mber / FieldID /	SDG			
	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER HAR05GW01S006 HAR05GW01S006		ssing Association D		Missing Association DP Missing Association DP		5071601 / CAQW2445Q001 / 16071 5071601 / CAQW2445Q001 / 16071
1. Case Narrative Items of Interes	t No items	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	nks were found	l.			
3. Spikes and Dup. Field Duplicat		ociated.				
Laboratory Dupli Matrix Spike		eptance criteria s SDG. No SD		IS RPD: None for this S	DG.	
4. Laboratory Con	ntrol Sample	No spikes in	this SDG. No spi	ke dupes in this SDG.		

16071080 SW9040C

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

Field ID	HAR05GW01S	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pН	7.04		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160	71194	Method	E300.0			
Reviewer:	mfesler		Date:	8/11/2016	Matrix:	WATER
Reviewed:	8/31/2016	=				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR21GW01S006	Ν	10 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR21GW01S006	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR23GW01S006	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005MS	MS	1		
WS09GW01S005SD	SD	1		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	0.52	U	U	0.52	1	MG/L	
Fluoride	0.33			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	420		=D	2.7	10	MG/L	InvalidLabFlag (=)
Field ID	HAR23GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	25			0.52	1	MG/L	
Fluoride	0.33			0.027	0.1	MG/L	
Nitrate (as N)	0.4			0.053	0.1	MG/L	
Sulfate	93			0.27	1	MG/L	
Field ID	ND136GW01	S002					
	1,21000,1101	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	52			0.52	1	MG/L	, ,
Fluoride	0.19			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	88			0.27	1	MG/L	
Field ID	ND136GW02	S002					
	ND130G W 02	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	46			0.52	1	MG/L	
Fluoride	0.14			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	93			0.27	1	MG/L	
Field ID	WS09GW018	2005					
	W507G W01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	34			0.52	1	MG/L	
Fluoride	0.14			0.027	0.1	MG/L	
		T T	T.T.		0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MO/L	

mfesler

Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160	71194	Method	E1625C			
Reviewer:	mfesler		Date:	8/11/2016	Matrix:	WATER
Reviewed:	8/31/2016	-				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Dilution ABLotValue		EBLotValue	TBLotValue
WATER				
HAR21GW01S006	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR23GW01S006	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	17			3	10	NG/L	
Field ID	HAR23GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	7.8	J	= J	2.9	9.8	NG/L	InvalidLabFlag (J)
Field ID	ND136GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	20			2.9	9.8	NG/L	
Field ID	ND136GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	36			3	10	NG/L	
Field ID	WS09GW018	8005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071194	Method	SW8015B
$\mathbf{O}\mathbf{O}\mathbf{O}$	10011137	mounda	01100101

Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2446Q001	TB	1		18071601 / CAQW2446Q001 / 160711
HAR21GW01S006	N	20 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR21GW01S006	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR23GW01S006	N	20 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR23GW01S006	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	20 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	10 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	20 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	10 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	20 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	10 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711

1. Case Narrative Items of Interest

The following items were noted: Interference

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

16071194 SW8015B

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Matrix Spike

No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG. Interference present in samples; influence from high levels of TCE, cis-1,2-DCE in samples. No Gas

pattern present. Data flagged as non-detect.

Mai	trix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
W	ATER		<u>C4-0</u>	C12 (TPH as Ga	as)		
		ND136GW01	S002	3	900 UG/L	U	Interference
		ND136GW02	S002	3	500 UG/L	U	Interference
		WS09GW01S	3005	2	2600 UG/L	U	Interference

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding TimeAll acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50			8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	53		=b	48	50	UG/L	InvalidLabFlag (=)
C7	50	U	U	8	50	UG/L	-
C8-C11	50	U	U	8	50	UG/L	
C8-C30	50			8	50	UG/L	
Field ID	HAR23GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	50	U	U	8	50	UG/L	
Field ID	ND136GW01	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
C12-C14	17	J	=J	8	50	UG/L	InvalidLabFlag (J)
C15-C20	270	3	_3	8	50	UG/L	invariaLast lag (b)
C21-C30	49	J	= J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	in variables ring (e)
C4-C12 (TPH as Gas)	3900	U	=b	480	500	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	interretence (e)
C8-C11	810	C		8	50	UG/L	
C8-C30	1100			8	50	UG/L	
Field ID	ND136GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag

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Field ID	ND136GW02	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
C15-C20	1800			8	50	UG/L	
C21-C30	210			8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	3500	U	=b	480	500	UG/L	Interference (U)
C7	13	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C11	570			8	50	UG/L	
C8-C30	2600			8	50	UG/L	
Field ID	WS09GW01S	8005					
Field ID	WS09GW018	Final	Lab				
Field ID Analyte	WS09GW01S		Lab Flag	MDL	RL	Units	ValidationReason (Flaç
		Final		MDL 8	RL 50	Units UG/L	ValidationReason (Fla
Analyte	Result	Final Flag	Flag				ValidationReason (Flag
Analyte C12-C14	Result	Final Flag U	Flag U	8	50	UG/L	
Analyte C12-C14 C15-C20	Result 50	Final Flag U J	Flag U =J	8	50 50	UG/L UG/L	InvalidLabFlag (J)
Analyte C12-C14 C15-C20 C21-C30	Result 50 11 17	Final Flag U J	Flag U =J =J	8 8 8	50 50 50	UG/L UG/L UG/L	InvalidLabFlag (J)
Analyte C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil)	Fesult 50 11 17 50	Final Flag U J J U	U =J =J U	8 8 8	50 50 50 50	UG/L UG/L UG/L UG/L	InvalidLabFlag (J) InvalidLabFlag (J)
Analyte C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil) C4-C12 (TPH as Gas)	50 11 17 50 2600	Final Flag U J U U	U =J U U =b	8 8 8 8 480	50 50 50 50 50	UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J) InvalidLabFlag (J)

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Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
Interference	Indicates the presence of quantitative interference	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071194	Method	SW8260B

Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC				
NativeID	Type D	Dilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2446Q001	TB	1		18071601 / CAQW2446Q001 / 160711
HAR21GW01S006	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR21GW01S006MS	MS	1		
HAR21GW01S006SD	SD	1		
HAR23GW01S006	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	Ν	100 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	Ν	100 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	Ν	250 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	Ν	100 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	Ν	1 Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711

1. Case Narrative Items of Interest

The following items were noted: 2CLEVE; LCS<LCL; MS<LCL, SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - HAR21GW01S006MS),

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c-1,2-Dichloroethene (MS - HAR21GW01S006MS), Pentachloroethane (MS - HAR21GW01S006MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - HAR21GW01S006SD), c-1,2-Dichloroethene (SD - HAR21GW01S006SD), Pentachloroethane (SD - HAR21GW01S006SD). For high recoveries and sample results ND, no flagging applied to those analytes. All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>2-Ch</u>	loroethyl Vinyl	<u>Ether</u>		
	HAR21GW01	S006	1	6 UG/L	R	MS <lcl< td=""></lcl<>
	HAR21GW01	S006	1	6 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>c-1,2</u>	2-Dichloroethen	<u>e</u>		
	HAR21GW01	S006	1	50 UG/L	J	MS <lcl< td=""></lcl<>
	HAR21GW01	S006	1	50 UG/L	J	SD <lcl< td=""></lcl<>
WATER		<u>Pent</u>	<u>achloroethane</u>			
	HAR21GW01	S006	1	.5 UG/L	none	MS>UCL
	HAR21GW01	S006	1	.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results ND, no flagging applied to those analytes. No spike dupes in this SDG.

<u>Matrix</u>	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246235BS	Bromomethane	62	70	120
WATER	BS	09916246235BS	t-1,3-Dichloropropene	125	70	120
WATER	BS	09916246236BS	2-Chloroethyl Vinyl Ether	69	70	120
WATER	BS	09916246236BS	Bromomethane	64	70	120
WATER	BS	09916246236BS	t-1,3-Dichloropropene	124	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

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Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude: WS09GW01S005.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude: WS09GW01S005. Sample was re-analyzed on a diluted basis due to concentration of target analytes.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	(0)
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	150	J		0.48	5	UG/L	MS <lcl (j)<="" td=""></lcl>
	150	J		0.48	5	UG/L	SD <lcl (j)<="" td=""></lcl>

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Field ID	HAR21GW01	S006					
A 1.	D 1	Final Flag	Lab Flag				
Analyte	Result	ı iag	ı iag	MDL	RL	Units	ValidationReason (Flag)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	MS>UCL (none)
	1.5	U	U	1.5	10	UG/L	SD>UCL (none)
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	` '
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	12			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.46	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	48	C	C	0.3	0.5	UG/L	
, in it contact				0.5	0.5	0.0/2	
Field ID	HAR23GW01						
Analyte	Result	Final Flag	Lab Flag	MDI	DI	Lleite	Validation Decree (Flow)
				MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	

Field ID HAR23GW01S006 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 1,2-Dibromo-3-Chloropropane U UG/L 1.2 U 1.2 25 1.2-Dibromoethane 0.36 U U 0.36 10 UG/L U 1,2-Dichlorobenzene 0.46 U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U U 1,3-Dichlorobenzene 0.4 0.4 10 UG/L 0.3 U U 0.3 10 UG/L 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 0.36 U U 0.36 5 2,2-Dichloropropane UG/L 2-Butanone 2.2 U U 2.2 50 UG/L U U 25 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 UG/L 2-Chloroethyl Vinyl Ether 16 R U 25 UG/L 2Cleve (R) 16 U U 2-Chlorotoluene 0.24 0.24 25 UG/L 2-Hexanone 2.1 U U 2.1 50 UG/L 0.13 U U 4-Chlorotoluene 0.13 25 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L Acetone 6 U U 6 50 UG/L U U 10 UG/L Benzene 0.14 0.14 Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L U U 25 Bromoform 0.5 0.5 UG/L Bromomethane 3.9 UJ U 3.9 25 UG/L LCS<LCL (UJ) 0.48 c-1,2-Dichloroethene U U 0.48 5 UG/L c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L U Carbon Tetrachloride 0.23 U 0.23 0.5 UG/L 0.17 U U 0.17 10 Chlorobenzene UG/L Chloroethane 2.3 U U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane U U 5 0.46 0.46 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L U Isopropanol 37 U 37 100 UG/L 0.58 U 0.58 Isopropylbenzene U 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L U U 0.16 10 UG/L p-Isopropyltoluene 0.16 sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L

Field ID	HAR23GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	` ,
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	1.1	J	= J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	2 ()
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
-							
Field ID	ND136GW018	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	40	U	U	40	500	UG/L	,
1,1,1-Trichloroethane	30	U	U	30	1000	UG/L	
1,1,2,2-Tetrachloroethane	41	U	U	41	1000	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	45	U	U	45	2500	UG/L	
1,1,2-Trichloroethane	38	U	U	38	1000	UG/L	
1,1-Dichloroethane	28	U	U	28	1000	UG/L	
1,1-Dichloroethene	60	J	=J	43	2500	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	46	U	U	46	1000	UG/L	invariazaor iag (5)
1,2,3-Trichlorobenzene	51	U	U	51	2500	UG/L	
1,2,3-Trichloropropane	64	U	U	64	500	UG/L	
1,2,4-Trichlorobenzene	50	U	U	50	2500	UG/L	
1,2,4-Trimethylbenzene	36	U	U	36	1000	UG/L	
1,2-Dibromo-3-Chloropropane	120	U	U	120	2500	UG/L	
1,2-Dibromoethane	36	U	U	36	1000	UG/L	
1,2-Dichlorobenzene	46	U	U	46	1000	UG/L	
1,2-Dichloroethane	24	U	U	24	500	UG/L	
1,2-Dichloropropane	42	U	U	42	1000	UG/L	
1,3,5-Trimethylbenzene	28	U	U	28	1000	UG/L	
1,3-Dichlorobenzene	40	U	U	40	1000	UG/L	
1,3-Dichloropropane	30	U	U	30	1000	UG/L	
1,4-Dichlorobenzene	43	U	U	43	1000	UG/L	
2,2-Dichloropropane	36	U	U	36	500	UG/L	
2-Butanone	220	U	U	220	5000	UG/L	
2-Chloro-1,1,1-trifluoroethane	210	U	U	210	2500	UG/L	
2-Chloroethyl Vinyl Ether	1600	R	U	1600	2500	UG/L UG/L	2Cleve (R)
2-Chlorotoluene	24	U	U	24	2500	UG/L UG/L	ZCIEVE (K)
2-Hexanone	210	U	U	210		UG/L UG/L	
4-Chlorotoluene	13	U	U	13	5000	UG/L UG/L	
4-Methyl-2-Pentanone	440	U	U	440	2500	UG/L UG/L	
Acetone	600	U	U	600	2500 5000	UG/L UG/L	
Benzene	14 30	U	U	14	1000	UG/L	
Bromobenzene Bromochloromethane	30 48	U U	U U	30 48	2500 2500	UG/L UG/L	
Bromodichloromethane	21	U	U	21	1000	UG/L	
Bromoform	50	U	U	50	2500	UG/L	I CO I CI (III)
Bromomethane	390	UJ	U	390	2500	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	16000			48	500	UG/L	

Field ID	ND136GW01	S002					
A b - d	D It	Final Flag	Lab Flag				
Analyte	Result	ı iag	ı iag	MDL	RL	Units	ValidationReason (Flag
Carbon Tetrachloride	23	U	U	23	50	UG/L	
Chlorobenzene	17	U	U	17	1000	UG/L	
Chloroethane	230	U	U	230	2500	UG/L	
Chloroform	46	U	U	46	1000	UG/L	
Chloromethane	180	U	U	180	2500	UG/L	
Chlorotrifluoroethylene	180	U	U	180	2500	UG/L	
Dibromochloromethane	25	U	U	25	1000	UG/L	
Dibromomethane	46	U	U	46	500	UG/L	
Dichlorodifluoromethane	46	U	U	46	2500	UG/L	
Ethylbenzene	14	U	U	14	1000	UG/L	
Hexachloro-1,3-Butadiene	32	U	U	32	2500	UG/L	
Isopropanol	3700	U	U	3700	10000	UG/L	
Isopropylbenzene	58	U	U	58	1000	UG/L	
Methylene Chloride	64	U	U	64	2500	UG/L	
Methyl-t-Butyl Ether (MTBE)	31	U	U	31	2500	UG/L	
n-Butylbenzene	23	U	U	23	2500	UG/L	
n-Propylbenzene	17	U	U	17	1000	UG/L	
o-Xylene	23	U	U	23	1000	UG/L	
p/m-Xylene	30	U	U	30	1000	UG/L	
Pentachloroethane	150	U	U	150	1000	UG/L	
p-Isopropyltoluene	16	U	U	16	1000	UG/L	
sec-Butylbenzene	25	U	U	25	2500	UG/L	
Styrene	17	U	U	17	1000	UG/L	
t-1,2-Dichloroethene	370	J	=J	37	1000	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	25	U	U	25	1000	UG/L	LCS>UCL (none)
tert-Butylbenzene	28	U	U	28	2500	UG/L	Zesi e ez (none)
Tetrachloroethene	39	U	U	39	500	UG/L	
Toluene	77	J	=J	24	1000	UG/L	InvalidLabFlag (J)
Trichloroethene	11000	3	_3	37	500	UG/L	invandLabi lag (3)
Trichlorofluoromethane	170	U	U	170	2500	UG/L	
Vinyl Chloride	580	O	C	30	50	UG/L	
Field ID							
Field ID	ND136GW02	S002 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	40	U	U	40	500	UG/L	
1,1,1-Trichloroethane	30	U	U	30	1000	UG/L	
1,1,2,2-Tetrachloroethane	41	U	U	41	1000	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	45	U	U	45	2500	UG/L	
1,1,2-Trichloroethane	38	U	U	38	1000	UG/L	
1,1-Dichloroethane	28	U	U	28	1000	UG/L	
1,1-Dichloroethene	43	U	U	43	2500	UG/L	
1,1-Dichloropropene	46	U	U	46	1000	UG/L	
	51	U	U	51	2500	UG/L	
1.2.3-Trichlorobenzene		U	U	64	500	UG/L	
1,2,3-Trichlorobenzene	64			U-T	500	CUL	
1,2,3-Trichloropropane	64 50				2500	HG/I	
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	50	U	U	50	2500	UG/L	
1,2,3-Trichloropropane					2500 1000 2500	UG/L UG/L UG/L	

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Field ID ND136GW02S002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U U UG/L 1,2-Dichlorobenzene 46 1000 46 1.2-Dichloroethane 24 U U 24 500 UG/L U 1,2-Dichloropropane 42 U 42 1000 UG/L 1,3,5-Trimethylbenzene 28 U U 28 1000 UG/L 1,3-Dichlorobenzene 40 U U 40 1000 UG/L 1,3-Dichloropropane 30 U U 30 1000 UG/L U U 1,4-Dichlorobenzene 43 43 1000 UG/L 36 U U 36 UG/L 2,2-Dichloropropane 500 2-Butanone 220 U U 220 5000 UG/L U U 2-Chloro-1,1,1-trifluoroethane 210 210 2500 UG/L 2-Chloroethyl Vinyl Ether 1600 R U 1600 2500 UG/L 2Cleve (R) U U 2-Chlorotoluene 24 24 2500 UG/L 210 U U 210 5000 UG/L 2-Hexanone U U 4-Chlorotoluene 13 13 2500 UG/L 4-Methyl-2-Pentanone 440 U U 440 2500 UG/L 600 U U 600 Acetone 5000 UG/L Benzene 14 U U 14 1000 UG/L U Bromobenzene 30 U 30 2500 UG/L Bromochloromethane 48 U U 48 2500 UG/L Bromodichloromethane 21 U U 21 1000 UG/L Bromoform 50 U U 50 2500 UG/L Bromomethane 390 UJ U 390 2500 UG/L LCS<LCL (UJ) 15000 UG/L c-1,2-Dichloroethene 48 500 c-1,3-Dichloropropene 25 U U 25 1000 UG/L U Carbon Tetrachloride 23 U 23 50 UG/L Chlorobenzene 17 U U 17 1000 UG/L 230 U 230 Chloroethane U 2500 UG/L Chloroform U U 46 46 1000 UG/L Chloromethane 180 U U 180 2500 UG/L Chlorotrifluoroethylene 180 U U 180 2500 UG/L Dibromochloromethane 25 U U 25 1000 UG/L Dibromomethane 46 U U 46 500 UG/L Dichlorodifluoromethane 46 U U 46 2500 UG/L Ethylbenzene 14 U U 14 1000 UG/L Hexachloro-1,3-Butadiene 32 U U 32 2500 UG/L Isopropanol 3700 U U 3700 10000 UG/L Isopropylbenzene 58 U U 58 1000 UG/L U Methylene Chloride 64 U 64 2500 UG/L Methyl-t-Butyl Ether (MTBE) U U 31 31 2500 UG/L n-Butylbenzene 23 U U 23 2500 UG/L n-Propylbenzene 17 U U 17 1000 UG/L o-Xylene 23 U U 23 1000 UG/L p/m-Xylene 30 U U 30 1000 UG/L Pentachloroethane 150 U U 150 1000 UG/L p-Isopropyltoluene U U 1000 UG/L 16 16 sec-Butylbenzene 25 U U 25 2500 UG/L 17 U U 17 1000 UG/L Styrene t-1,2-Dichloroethene 170 J =J37 1000 UG/L InvalidLabFlag (J) LCS>UCL (none) t-1,3-Dichloropropene 25 U U 25 1000 UG/L tert-Butylbenzene 28 U U 28 2500 UG/L

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Field ID	ND136GW02	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Tetrachloroethene	39	U	U	39	500	UG/L	
Toluene	310	J	=J	24	1000	UG/L	InvalidLabFlag (J)
Trichloroethene	5000	· ·	· ·	37	500	UG/L	invanue ing (c)
Trichlorofluoromethane	170	U	U	170	2500	UG/L	
Vinyl Chloride	4600			30	50	UG/L	
Field ID	WS09GW018	2005					
1101012	WSU9GWUIS	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	40	U	U	40	500	UG/L	, ,
1,1,1-Trichloroethane	30	U	U	30	1000	UG/L	
1,1,2,2-Tetrachloroethane	41	U	U	41	1000	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	45	U	U	45	2500	UG/L	
1,1,2-Trichloroethane	38	U	U	38	1000	UG/L	
1,1-Dichloroethane	28	U	U	28	1000	UG/L	
1,1-Dichloroethene	43	U	U	43	2500	UG/L	
1,1-Dichloropropene	46	U	U	46	1000	UG/L	
1,2,3-Trichlorobenzene	51	U	U	51	2500	UG/L	
1,2,3-Trichloropropane	64	U	U	64	500	UG/L	
1,2,4-Trichlorobenzene	50	U	U	50	2500	UG/L	
1,2,4-Trimethylbenzene	36	U	U	36	1000	UG/L	
1,2-Dibromo-3-Chloropropane	120	U	U	120	2500	UG/L	
1,2-Dibromoethane	36	U	U	36	1000	UG/L	
1,2-Dichlorobenzene	46	U	U	46	1000	UG/L	
1,2-Dichloroethane	24	U	U	24	500	UG/L	
1,2-Dichloropropane	42	U	U	42	1000	UG/L	
1,3,5-Trimethylbenzene	28	U	U	28	1000	UG/L	
1,3-Dichlorobenzene	40	U	U	40	1000	UG/L UG/L	
	30	U	U	30	1000	UG/L UG/L	
1,3-Dichloropropane 1,4-Dichlorobenzene							
<i>'</i>	43	U	U	43	1000	UG/L	
2,2-Dichloropropane	36	U	U	36	500	UG/L	
2-Butanone	220	U	U	220	5000	UG/L	
2-Chloro-1,1,1-trifluoroethane	210	U	U	210	2500	UG/L	2GI (D)
2-Chloroethyl Vinyl Ether	1600	R	U	1600	2500	UG/L	2Cleve (R)
2-Chlorotoluene	24	U	U	24	2500	UG/L	
2-Hexanone	210	U	U	210	5000	UG/L	
4-Chlorotoluene	13	U	U	13	2500	UG/L	
4-Methyl-2-Pentanone	440	U	U	440	2500	UG/L	
Acetone	600	U	U	600	5000	UG/L	
Benzene	14	U	U	14	1000	UG/L	
Bromobenzene	30	U	U	30	2500	UG/L	
Bromochloromethane	48	U	U	48	2500	UG/L	
Bromodichloromethane	21	U	U	21	1000	UG/L	
Bromoform	50	U	U	50	2500	UG/L	
Bromomethane	390	UJ	U	390	2500	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	2200			48	500	UG/L	
c-1,3-Dichloropropene	25	U	U	25	1000	UG/L	
Carbon Tetrachloride	23	U	U	23	50	UG/L	

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Field ID	WS09GW01S	3005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chloroethane	230	U	U	230	2500	UG/L	
Chloroform	46	U	U	46	1000	UG/L	
Chloromethane	180	U	U	180	2500	UG/L	
Chlorotrifluoroethylene	180	U	U	180	2500	UG/L	
Dibromochloromethane	25	U	U	25	1000	UG/L	
Dibromomethane	46	U	U	46	500	UG/L	
Dichlorodifluoromethane	46	U	U	46	2500	UG/L	
Ethylbenzene	14	U	U	14	1000	UG/L	
Hexachloro-1,3-Butadiene	32	U	U	32	2500	UG/L	
Isopropanol	3700	U	U	3700	10000	UG/L	
Isopropylbenzene	58	U	U	58	1000	UG/L	
Methylene Chloride	64	U	U	64	2500	UG/L	
Methyl-t-Butyl Ether (MTBE)	31	U	U	31	2500	UG/L	
n-Butylbenzene	23	U	U	23	2500	UG/L	
n-Propylbenzene	17	U	U	17	1000	UG/L	
o-Xylene	23	U	U	23	1000	UG/L	
p/m-Xylene	30	U	U	30	1000	UG/L	
Pentachloroethane	150	U	U	150	1000	UG/L	
p-Isopropyltoluene	16	U	U	16	1000	UG/L	
sec-Butylbenzene	25	U	U	25	2500	UG/L	
Styrene	17	U	U	17	1000	UG/L	
t-1,2-Dichloroethene	67	J	=J	37	1000	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	25	U	U	25	1000	UG/L	LCS>UCL (none)
tert-Butylbenzene	28	U	U	28	2500	UG/L	
Tetrachloroethene	39	U	U	39	500	UG/L	
Toluene	24	U	U	24	1000	UG/L	
Trichloroethene	25000		=D	92	1200	UG/L	InvalidLabFlag (=)
Trichlorofluoromethane	170	U	U	170	2500	UG/L	
Vinyl Chloride	30	U	U	30	50	UG/L	

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071194	Method	SW8260B-SIM
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Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC				
NativeID	Type 1	Dilution	ABLotValue	EBLotValue	TBLotValue
WATER					
CAQW2446Q001	TB	1			18071601 / CAQW2446Q001 / 160711
HAR21GW01S006	N	1 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
HAR23GW01S006	N	1 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	1000 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW01S002	N	1 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	250 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
ND136GW02S002	N	1 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	2500 N	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711
WS09GW01S005	N	1 1	Missing Association DP	Missing Association DP	18071601 / CAQW2446Q001 / 160711

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	1.2			0.35	1	UG/L	
Field ID	HAR23GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.54	J	= J	0.35	1	UG/L	InvalidLabFlag (J)
Field ID	ND136GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	350	U	U	350	1000	UG/L	
Field ID	ND136GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	88	U	U	88	250	UG/L	
1,4-Dioxane Field ID	88 		U	88	250	UG/L	
			U Lab	88	250	UG/L	
		6005		88 MDL	250 RL	UG/L Units	ValidationReason (Fla

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071195	Met	hod 4500	0-NH3F			
Reviewer: bjone	s7		Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016					
Field Samples Field blank association	, lot values: LotNumber / F	FieldID / SDG				
		iolaib / obo				
NativeID	QAQC Type Dilution ABL	otValue	EB	LotValue		TBLotValue
WATER						
HAR21GW01S006	N 1 Missing Ass	ociation DP	Missing	Association DP	18	8071601 / CAQW2446Q001 / 16071
HAR23GW01S006	N 1 Missing Ass	ociation DP	Missing	Association DP	18	3071601 / CAQW2446Q001 / 16071
1. Case Narrative Items of Interes	No items of cond	ern.				
2. Blank Summar	y					
Field Blanks	No Field Blanks were	found.				
Method Blanks	No Method Blank dete	cts were found.				

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

16071195 4500-NH3F

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Ammonia (as N)	0.059			0.0086	0.05	MG/L	
Field ID	HAR23GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.03	J	=J	0.0086	0.05	MG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

Method E314 **SDG** 16071195 Reviewer: bjones7 Date: 8/8/2016 Matrix: WATER 9/2/2016 Reviewed: Field Samples Field blank association lot values: LotNumber / FieldID / SDG **QAQC Type Dilution NativeID ABLotValue EBLotValue TBLotValue WATER** HAR21GW01S006 Ν 1 Missing Association DP Missing Association DP 18071601 / CAQW2446Q001 / 160711 HAR23GW01S006 Ν 1 Missing Association DP Missing Association DP 18071601 / CAQW2446Q001 / 160711 HAR23GW01S006MS MS HAR23GW01S006SD SD 1. Case Narrative No items of concern. **Items of Interest** 2. Blank Summary **Field Blanks** No Field Blanks were found. No Method Blank detects were found. **Method Blanks** 3. Spikes and Duplicates Field Duplicates No FD Associated. **Laboratory Duplicates** None in this SDG **Matrix Spike** All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD acceptance criteria were met.

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	HAR23GW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

						•
SDG 16071195		Method	SW8270C-SIM			
Reviewer: bjones	s7		Date:	8/8/2016	Matrix: W	ATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association	lot values: LotNu	mber / FieldID /	SDG			_
NativeID (QAQC Type Dilution	ABLotValue	E	BLotValue	ТВ	LotValue
WATER HAR21GW01S006	N 1 Mi	ssing Association [DP Missi	ng Association DP	180710	601 / CAQW2446Q001 / 16071
1. Case Narrative Items of Interest	No items	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	ank detects were	e found.			
3. Spikes and Dupl	icates					
Field Duplicat	es No FD Ass	sociated.				
Laboratory Duplic		n this SDG	Na fanthia CDC - MC DI	DD. Nama familia SI	Y.	
мантх эргке	NO MIS S IOI UII	is SDG. NO SL	's for this SDG. MS RF	D: None for this SI		
4. Laboratory Con	trol Sample	All acceptar	nce criteria were met.			
5. Surrogates	All acce	ptance criteria v	were met.			
6. Tuning and Mas Calibration	SS Tunin	g and Mass Cal	libration were not exami	ned by AutoDV.		

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01S006								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
Bis(2-Ethylhexyl) Phthalate	0.12	J	=J	0.046	9.4	UG/L	InvalidLabFlag (J)		
Butyl Benzyl Phthalate	0.061	J	=J	0.05	9.4	UG/L	InvalidLabFlag (J)		
Diethyl Phthalate	0.05	U	U	0.05	9.4	UG/L			
Dimethyl Phthalate	0.043	U	U	0.043	9.4	UG/L			
Di-n-Butyl Phthalate	0.076	U	U	0.076	9.4	UG/L			
Di-n-Octyl Phthalate	0.045	U	U	0.045	9.4	UG/L			

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

000 40074405		fathed C	M0220 A			
SDG 16071195 Reviewer: bjone		Method S	W8330A Date:	8/8/2016	Matrix:	WATER
Reviewed:	9/2/2016					
Field Samples Field blank association		er / FieldID / SDG	6			
NativeID	QAQC Type Dilution A	BLotValue	ЕВ	LotValue		TBLotValue
WATER HAR21GW01S006 HAR23GW01S006		g Association DP g Association DP		Association DP Association DP		8071601 / CAQW2446Q001 / 1607 8071601 / CAQW2446Q001 / 1607
1. Case Narrative Items of Interes	No items of	concern.				
2. Blank Summar	ry					
Field Blanks	No Field Blanks w	ere found.				
Method Blanks	No Method Blank	detects were fou	nd.			
3. Spikes and Dup Field Duplica	olicates tes No FD Associ	ated.				
Laboratory Dupl Matrix Spike			r this SDG. MS RPD	: None for this SI	OG.	
4. Laboratory Co.	ntrol Sample	All acceptance c	riteria were met.			

5. Surrogates All acceptance criteria were met.

16071195 SW8330A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,3,5-Trinitrobenzene	0.055	U	U	0.055	1.2	UG/L	
1,3-Dinitrobenzene	0.062	U	U	0.062	1.2	UG/L	
2,4,6-Trinitrotoluene	0.032	U	U	0.032	1.2	UG/L	
2,4-Dinitrotoluene	0.048	U	U	0.048	1.2	UG/L	
2,6-Dinitrotoluene	0.064	U	U	0.064	1.2	UG/L	
2-Amino-4,6-DNT	0.075	U	U	0.075	1.2	UG/L	
2-Nitrotoluene	0.049	U	U	0.049	1.2	UG/L	
3-Nitrotoluene	0.057	U	U	0.057	1.2	UG/L	
4-Amino-2,6-DNT	0.066	U	U	0.066	1.2	UG/L	
4-Nitrotoluene	0.066	U	U	0.066	1.2	UG/L	
HMX	0.057	U	U	0.057	1.2	UG/L	
Nitrobenzene	0.069	U	U	0.069	1.2	UG/L	
RDX	0.073	U	U	0.073	1.2	UG/L	
Tetryl	0.082	U	U	0.082	1.2	UG/L	
Field ID	HAR23GW01	S006					
	111112001101	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.05	U	U	0.05	1.1	UG/L	
1,3-Dinitrobenzene	0.056	U	U	0.056	1.1	UG/L	
2,4,6-Trinitrotoluene	0.029	U	U	0.029	1.1	UG/L	
2,4-Dinitrotoluene	0.043	U	U	0.043	1.1	UG/L	
2,6-Dinitrotoluene	0.058	U	U	0.058	1.1	UG/L	
2,6-Dinitrotoluene 2-Amino-4,6-DNT	0.058 0.067	U U	U U	0.058 0.067	1.1 1.1	UG/L UG/L	
*							
2-Amino-4,6-DNT	0.067	U	U	0.067	1.1	UG/L	
2-Amino-4,6-DNT 2-Nitrotoluene	0.067 0.044	U U	U U	0.067 0.044	1.1 1.1	UG/L UG/L	
2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene	0.067 0.044 0.052	U U U	U U U	0.067 0.044 0.052	1.1 1.1 1.1	UG/L UG/L UG/L	
2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT	0.067 0.044 0.052 0.06	U U U U	U U U U	0.067 0.044 0.052 0.06	1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L	
2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT 4-Nitrotoluene	0.067 0.044 0.052 0.06 0.059	U U U U	U U U U	0.067 0.044 0.052 0.06 0.059	1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L	
2-Amino-4,6-DNT 2-Nitrotoluene 3-Nitrotoluene 4-Amino-2,6-DNT 4-Nitrotoluene HMX	0.067 0.044 0.052 0.06 0.059 0.051	U U U U U	U U U U U	0.067 0.044 0.052 0.06 0.059 0.051	1.1 1.1 1.1 1.1 1.1 1.1	UG/L UG/L UG/L UG/L UG/L UG/L	

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No surrogates in this SDG.

Data Quality Evaluation

5. Surrogates

						_
SDG 16071195		Method	SW9040C			
Reviewer: bjones	s7		Date:	8/8/2016	Matrix: \	WATER
Reviewed:	9/2/2016	-				
Field Samples Field blank association		nber / FieldID /	SDG			_
	QAQC Type Dilution	ABLotValue		EBLotValue	Т	BLotValue
WATER HAR23GW01S006 HAR23GW01S006		sing Association Dising Association D		Missing Association DP Missing Association DP		71601 / CAQW2446Q001 / 1607 71601 / CAQW2446Q001 / 1607
1. Case Narrative Items of Interes	t No items of	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blanks	were found.				
Method Blanks	No Method Blan	nks were found	I .			
3. Spikes and Dup Field Duplica		ociated.				
Laboratory Dupli Matrix Spike		eptance criteria s SDG. No SD		IS RPD: None for this S	DG.	
4. Laboratory Con	ntrol Sample	No spikes in	this SDG. No spi	ke dupes in this SDG.		

16071195 SW9040C

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR23GW01S	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pH	6.98		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

CDC	40074005	Mathad	E200 0
SDG	16071295	Method	E300.0

Reviewer: mfesler Date: 8/12/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

N. C. TD	QAQC	9 d ADT (\$7.1	EDI (V.)	TODY AND I
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR11GW01S007	N	5 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	2 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	2 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	2 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

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4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	63			0.52	1	MG/L	
Fluoride	0.45			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	320		=D	1.3	5	MG/L	InvalidLabFlag (=)
Field ID	ND136GW03	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
Chloride	50			0.52	1	MG/L	
Fluoride	0.34			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	120		=D	0.54	2	MG/L	InvalidLabFlag (=)
Field ID	ND136GW04	S002					
	1,21000,101,	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
Chloride	44			0.52	1	MG/L	
Fluoride	0.27			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	140		=D	0.54	2	MG/L	InvalidLabFlag (=)
Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
Chloride	39			0.52	1	MG/L	
Fluoride	0.18			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
minate (as iv)							

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16	071295	Method	E1625C			
Reviewer:	mfesler		Date:	8/12/2016	Matrix:	WATER
Reviewed:	8/31/2016	_				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
WAILK				
HAR11GW01S007	N	 Missing Association DP 	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712

1. Case Narrative
Items of Interest
There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** All acceptance criteria were met.

16071295 E1625C

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID							
rieia ib	HAR11GW01						
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	ND136GW03	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	58			2.9	9.6	NG/L	
Field ID	ND136GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	75			2.9	9.6	NG/L	
Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071295 Method SW8015B

Reviewer: mfesler Date: 8/12/2016 Matrix: WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2447Q001	TB	1		19071601 / CAQW2447Q001 / 160712
HAR11GW01S007	N	20 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	20 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	20 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	20 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712

1. Case Narrative Items of Interest

The following items were noted: Interference

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

Matrix Sample ID LR Type Analyte Result MS/MSD Qualifier* Criteria

WATER <u>C4-C12 (TPH as Gas)</u>

16071295 SW8015B

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 ND136GW03S003
 2500 UG/L
 U
 Interference

 ND136GW04S002
 110 UG/L
 U
 Interference

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.
- **6. Tuning and Mass** Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions. Interference present in samples; influence from high levels of TCE, cis-1,2-DCE in samples. No Gas pattern present. Data

flagged as non-detect.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	28	J	= J	8	50	UG/L	InvalidLabFlag (J)
C15-C20	300			8	50	UG/L	
C21-C30	130			8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	460			8	50	UG/L	
Field ID	ND136GW03	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	8.3	J	=J	8	50	UG/L	InvalidLabFlag (J)
C15-C20	830			8	50	UG/L	
C21-C30	150			8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	2500	U	=b	48	50	UG/L	Interference (U)
C7	36	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C11	47	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	1000			8	50	UG/L	
Field ID	ND136GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	420			8	50	UG/L	
C21-C30	12	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	110	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	40	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	470			8	50	UG/L	
Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag

16071295 SW8015B

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Validated Form I

Field ID	RD49CGW01S006								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
C15-C20	50	U	U	8	50	UG/L			
C21-C30	69			8	50	UG/L			
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L			
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L			
C7	50	U	U	8	50	UG/L			
C8-C11	9	J	=J	8	50	UG/L	InvalidLabFlag (J)		
C8-C30	78			8	50	UG/L			

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
Interference	Indicates the presence of quantitative interference	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160	71295	Method	SW8260B			
Reviewer:	mfesler		Date:	8/12/2016	Matrix:	WATER
Reviewed:	8/31/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	Oilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2447Q001	TB	1		19071601 / CAQW2447Q001 / 160712
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	100 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	10 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW03S003	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
ND136GW04S002	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712

1. Case Narrative Items of Interest

The following items were noted: 2Cleve; LCS<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results ND, no flagging applied to those analytes. No spike dupes in this SDG.

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<u>Matrix</u>	QAQC Ty	pe Field ID	<u>Analyte</u>	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246236BS	2-Chloroethyl Vinyl Ether	69	70	120
WATER	BS	09916246236BS	Bromomethane	64	70	120
WATER	BS	09916246236BS	t-1,3-Dichloropropene	124	70	120
WATER	BS	09916246237BS	2-Chloroethyl Vinyl Ether	63	70	120
WATER	BS	09916246237BS	Bromomethane	61	70	120
WATER	BS	09916246237BS	t-1,3-Dichloropropene	125	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

ND136GW03S003.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

ND136GW03S003. Sample re-analyzed on a diluted basis due to concentration of target

analytes

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	31	J	=J	6	50	UG/L	InvalidLabFlag (J)
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	5.6			0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	

Field ID	HAR11GW01						
Analyte	Result	Final Flag	Lab Flag				
<u> </u>				MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	170			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID							
rieid iD	ND136GW03	S003 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	4	U	U	4	50	UG/L	
1,1,1-Trichloroethane	3	U	U	3	100	UG/L	
1,1,2,2-Tetrachloroethane	4.1	U	U	4.1	100	UG/L	
,2-Trichloro-1,2,2-Trifluoroethane	4.5	U	U	4.5	250	UG/L	
1,1,2-Trichloroethane	3.8	U	U	3.8	100	UG/L	
1,1-Dichloroethane	2.8	U	U	2.8	100	UG/L	
1,1-Dichloroethene	25	J	=J	4.3	250	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	4.6	U	U	4.6	100	UG/L	
.,oropropone	5.1	U	U	5.1	250	UG/L	
1.2.3-Trichlorobenzene	J.1			6.4	50	UG/L UG/L	
1,2,3-Trichlorobenzene	6.4	11	11		50	O O/L	
1,2,3-Trichloropropane	6.4 5	U	U		250	HG/I	
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	5	U	U	5	250	UG/L	
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene	5 3.6	U U	U U	5 3.6	100	UG/L	
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	5	U	U	5			

Field ID ND136GW03S003 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U U UG/L 1,2-Dichloroethane 2.4 2.4 50 1,2-Dichloropropane 4.2 U U 4.2 100 UG/L U 1,3,5-Trimethylbenzene 2.8 U 2.8 100 UG/L 1,3-Dichlorobenzene 4 U U 4 100 UG/L 1,3-Dichloropropane 3 U U 3 100 UG/L 1,4-Dichlorobenzene 4.3 U U 4.3 100 UG/L U U 2,2-Dichloropropane 3.6 3.6 50 UG/L 22 U U 22 500 UG/L 2-Butanone 2-Chloro-1,1,1-trifluoroethane 21 U U 21 250 UG/L R U LCS<LCL (UJ) 2-Chloroethyl Vinyl Ether 160 160 250 UG/L 160 R U 160 250 UG/L 2Cleve (R) U U 2-Chlorotoluene 2.4 2.4 250 UG/L 2-Hexanone U U 500 UG/L 21 21 U U 250 4-Chlorotoluene 1.3 1.3 UG/L 4-Methyl-2-Pentanone 44 U U 44 250 UG/L 60 U U 60 500 Acetone UG/L Benzene 1.4 U U 1.4 100 UG/L U Bromobenzene 3 U 3 250 UG/L Bromochloromethane 4.8 U U 250 UG/L 4.8 Bromodichloromethane 2.1 U U 2.1 100 UG/L Bromoform 5 U U 5 250 UG/L Bromomethane 39 UJ U 39 250 UG/L LCS<LCL (UJ) 8900 =D 48 UG/L InvalidLabFlag (=) c-1,2-Dichloroethene 500 c-1,3-Dichloropropene 2.5 U U 2.5 100 UG/L U Carbon Tetrachloride 2.3 U 2.3 5 UG/L Chlorobenzene 1.7 U U 1.7 100 UG/L U U 250 Chloroethane 23 23 UG/L Chloroform U U 4.6 4.6 100 UG/L Chloromethane 18 U U 18 250 UG/L Chlorotrifluoroethylene 18 U U 18 250 UG/L Dibromochloromethane 2.5 U U 2.5 100 UG/L Dibromomethane 4.6 U U 4.6 50 UG/L Dichlorodifluoromethane 4.6 U U 4.6 250 UG/L Ethylbenzene U U 100 1.4 1.4 UG/L Hexachloro-1,3-Butadiene 3.2 U U 3.2 250 UG/L Isopropanol 370 U U 370 1000 UG/L Isopropylbenzene 5.8 U U 5.8 100 UG/L U 250 Methylene Chloride 6.4 U 6.4 UG/L Methyl-t-Butyl Ether (MTBE) U U 3.1 3.1 250 UG/L 2.3 n-Butylbenzene 2.3 U U 250 UG/L n-Propylbenzene 1.7 U U 1.7 100 UG/L 2.3 o-Xylene U U 2.3 100 UG/L p/m-Xylene 3 U U 3 100 UG/L 15 Pentachloroethane U U 15 100 UG/L p-Isopropyltoluene 1.6 U U 100 UG/L 1.6 sec-Butylbenzene 2.5 U U 2.5 250 UG/L 1.7 U U 1.7 100 UG/L Styrene t-1,2-Dichloroethene 1300 3.7 100 UG/L t-1,3-Dichloropropene 2.5 U U 2.5 100 UG/L LCS>UCL (none) tert-Butylbenzene 2.8 U U 2.8 250 UG/L

Field ID	ND136GW03	S003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Tetrachloroethene	3.9	U	U	3.9	50	UG/L	
Toluene	98	J	=J	2.4	100	UG/L	InvalidLabFlag (J)
Trichloroethene	5100	J	=D	37	500	UG/L	InvalidLabFlag (=)
Trichlorofluoromethane	17	U	U	17	250	UG/L	invandEator lag (=)
Vinyl Chloride	770	C	=D	30	50	UG/L	InvalidLabFlag (=)
Field ID	ND136GW04	S002					
	1101300 1104	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chioroculyi vinyi Luici	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	zeleve (R)
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	38	J	=J	6	50	UG/L	InvalidLabFlag (J)
Benzene Bromobenzene	0.26 0.3	J U	=J	0.14	10	UG/L UG/L	InvalidLabFlag (J)
			U	0.3	25 25		
Bromochloromethane Bromodichloromethane	0.48 0.21	U U	U	0.48	25	UG/L	
Bromodicniorometnane Bromoform			U	0.21	10	UG/L	
Bromotorm Bromomethane	0.5 3.9	U UJ	U U	0.5 3.9	25 25	UG/L	ICC <ici (iii)<="" td=""></ici>
		OJ	U		25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	100	**	**	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	

Field ID	ND136GW048						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	vandatom (odoon (n lag
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.23	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.40	U	U	0.40	10	UG/L	
Hexachloro-1,3-Butadiene	0.14	U	U	0.14	25	UG/L UG/L	
Isopropanol	37	U	U	37	100	UG/L UG/L	
* *							
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	3.9	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	21			0.24	10	UG/L	
Trichloroethene	53			0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	42			0.3	0.5	UG/L	
Field ID	RD49CGW01	S006					
Analyte	Result	Final Flag	Lab Flag		Б.		V 11 5 /5!
				MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
	0.64	U	U	0.64	5	UG/L	
1,2,3-Trichloropropane	0.5	U	U	0.5	25	UG/L	
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.5						
1,2,4-Trichlorobenzene	0.36	U	U	0.36	10	UG/L	
1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene			U U	0.36 1.2	10 25	UG/L UG/L	
1,2,4-Trichlorobenzene	0.36	U					

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Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
, ,	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	. ,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	34	O3	O	0.48	5	UG/L	LCS\LCL (C3)
c-1,3-Dichloropropene	0.25	U	U	0.48	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.23	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
		U				UG/L UG/L	
Dibromomethane	0.46		U	0.46	5		
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	2.4	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	

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Field ID	RD49CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.39	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160	OG 16071295		SW8260B-SIM			
Reviewer:	mfesler		Date:	8/12/2016	Matrix:	WATER
Reviewed:	8/31/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC				
NativeID	Type I	Dilution ABLotValue	EBLotValue	TBLotValue	
WATER					
CAQW2447Q001	TB	1		19071601 / CAQW2447Q001 / 160712	
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
ND136GW03S003	N	500 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
ND136GW03S003	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
ND136GW04S002	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

16071295 SW8260B-SIM

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5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	2.7			0.35	1	UG/L	
Field ID	ND136GW03	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	180	U	U	180	500	UG/L	
Field ID	ND136GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	19			0.35	1	UG/L	
Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
							· · · · · · · · · · · · · · · · · · ·

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NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071296	Method	4500-NH3F	
Reviewer: bjones	s7	Date: 8/9/2016	Matrix: WATER
Reviewed:	9/2/2016		
Field Samples Field blank association	lot values: LotNumber / FieldID / S	SDG	
	QAQC Type Dilution ABLotValue	EBLotValue	TBLotValue
WATER HAR08GW01S007 HAR11GW01S007 RD49CGW01S006	N 1 Missing Association DF N 1 Missing Association DF N 1 Missing Association DF	Missing Association DP	19071601 / CAQW2447Q001 / 16071 19071601 / CAQW2447Q001 / 16071 19071601 / CAQW2447Q001 / 16071
1. Case Narrative Items of Interest	No items of concern.		
2. Blank Summary	y		
Field Blanks	No Field Blanks were found.		
Method Blanks	No Method Blank detects were	found.	
3. Spikes and Dupl Field Duplicat			

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

HAR08GW01	S007					
	Final	Lab				
Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
0.0086	U	U	0.0086	0.05	MG/L	
HAR11GW01	S007					
	Final	Lab				
Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
0.035	J	= J	0.0086	0.05	MG/L	InvalidLabFlag (J)
RD49CGW01	S006					
	Final	Lab				
Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
0.024	J	=J	0.0086	0.05	MG/L	InvalidLabFlag (J)
	Result 0.0086 HAR11GW01 Result 0.035 RD49CGW01 Result	Result Flag 0.0086 U HAR11GW01S007 Final Result Flag 0.035 J RD49CGW01S006 Final Result Flag	Result Final Lab Flag 0.0086 U U HAR11GW01S007 Final Lab Flag Result Flag Flag 0.035 J =J RD49CGW01S006 Result Flag Flag Result Flag Flag	Result Final Flag Lab Flag MDL 0.0086 U U 0.0086 HAR11GW01S007 Final Flag Flag MDL 0.035 J =J 0.0086 RD49CGW01S006 Result Final Flag Lab Flag MDL	Result Final Flag Lab Flag MDL RL 0.0086 U U 0.0086 0.05 HAR11GW01S007 Final Result Flag Flag MDL RL 0.035 J =J 0.0086 0.05 RD49CGW01S006 Result Flag Flag MDL RL	Result Final Flag Lab Flag MDL RL Units 0.0086 U U 0.0086 0.05 MG/L HAR11GW01S007 Final Flag Lab Flag MDL RL Units 0.035 J =J 0.0086 0.05 MG/L RD49CGW01S006 Result Flag Flag MDL RL Units

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

5. Surrogates

No surrogates in this SDG.

SDG 16071296		Method	E300.0			
Reviewer: bjones	s7		Date:	8/9/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				
Field Samples						
Field blank association		nber / FieldID /	SDG			
	QAQC Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER						
HAR08GW01S007 HAR08GW01S007MS HAR08GW01S007SD	N 1 Mis MS 1 SD 1	sing Association C	DP N	lissing Association DP	19	9071601 / CAQW2447Q001 / 16071
1. Case Narrative Items of Interes	t	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Blan	nk detects were	e found.			
3. Spikes and Dup	licates					
Field Duplicat	tes No FD Asso	ociated.				
Laboratory Dupli	cates None in	this SDG				
Matrix Spike	All MS acceptar acceptance crite		re met. All SD accep	otance criteria were me	t. All RPD	
4. Laboratory Con	atrol Sample	All acceptan	nce criteria were met.	. No spike dupes in thi	s SDG.	

16071296 E300.0

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Fluoride	0.13			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	

Data Quality Evaluation

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC			
NativeID 7	Гуре Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR08GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
HAR08GW01S007MS	MS	1		
HAR08GW01S007SD	SD	1		
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
RD49CGW01S006	Ν	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments Field

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	HAR11GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	RD49CGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Perchlorate	3.4			0.41	2	UG/L	

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Validated Form I

Data Quality Evaluation

Calibration

						_
SDG 16071296		Method	E1625C			
Reviewer: bjones	s7		Date:	8/9/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association		nber / FieldID /	SDG			
	QAQC Type Dilution	ABLotValue		EBLotValue	•	TBLotValue
WATER HAR08GW01S007	N 1 Mis	sing Association D	DP Mi	ssing Association DP	190	071601 / CAQW2447Q001 / 16071
1. Case Narrative Items of Interes	t No items of	of concern.				
2. Blank Summar	y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Blan	nk detects were	e found.			
3. Spikes and Dupi Field Duplica		ociated.				
Laboratory Dupli Matrix Spike			o's for this SDG. MS	RPD: None for this SD	OG.	
4. Laboratory Con	ntrol Sample	All acceptan	nce criteria were met.	No spike dupes in this	SDG.	
5. Surrogates	All accep	otance criteria v	vere met.			
6. Tuning and Mas	SS Tuning	g and Mass Cal	ibration were not exa	mined by AutoDV.		

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	12			2.8	9.4	NG/L	

Data Quality Evaluation

Reviewer: bjones7 Date: 8/9/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR08GW01S007	N	20 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
HAR08GW01S007	Ν	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712
HAR08GW01S007M	s MS	1		
HAR08GW01S007SE) SD	1		

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2447Q001	TB	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 1607129

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

16071296 SW8015B

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package

Package was complete for level V validation.

No samples were excluded for dilutions or re-extractions.

Forms Review/ Items of

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	48	U	U	48	50	UG/L	
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	

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Validated Form I

Data Quality Evaluation

SDG 16071296 **Method SW8260B**

Reviewer: bjones7 Date: 8/9/2016 Matrix: WATER

Reviewed: 9/2/2016

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC

NativeID Type Dilution ABLotValue EBLotValue TBLotValue

WATER

HAR08GW01S007 N 1 Missing Association DP Missing Association DP 19071601 / CAQW2447Q001 / 160712

HAR08GW01S007MS MS 1 HAR08GW01S007SD SD 1

Associated Field Blanks (other SDGs)

NativeID	Type Dilution	ABLotValue	EBLotValue	TBLotValue	
WATER					

WAIER

CAQW2447Q001 TB 1 Missing Association DP Missing Association DP 19071601 / CAQW2447Q001 / 1607129

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL; MS<LCL; SD<LCL.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - HAR08GW01S007MS),

Isopropanol (MS - HAR08GW01S007MS), Pentachloroethane (MS -

HAR08GW01S007MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - HAR08GW01S007SD), Isopropanol (SD - HAR08GW01S007SD), Pentachloroethane (SD - HAR08GW01S007SD). For high recoveries and sample results reported as ND, no

flagging was applied. All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>2-Ch</u>	loroethyl Vinyl	<u>Ether</u>		
	HAR08GW01	S007	1	6 UG/L	R	MS <lcl< td=""></lcl<>
	HAR08GW01	S007	1	6 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>Isop</u>	<u>ropanol</u>			
	HAR08GW01	S007	3	7 UG/L	none	MS>UCL
	HAR08GW01	S007	3	7 UG/L	none	SD>UCL
WATER		<u>Pent</u>	achloroethane			
	HAR08GW01	S007	1	.5 UG/L	none	MS>UCL
	HAR08GW01	S007	1	.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike dupes in this SDG.

Matrix	QAQC Type	Field ID	<u>Analyte</u>	Recovery	LowerLimit	UpperLimit
WATER	BS (09916246236BS	2-Chloroethyl Vinyl Ether	69	70	120
WATER	BS (09916246236BS	Bromomethane	64	70	120
WATER	BS (09916246236BS	t-1,3-Dichloropropene	124	70	120

- **5. Surrogates** All acceptance criteria were met.
- 6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration

Initial Calibration was not examined by AutoDV.

Continuing Calibration

Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

16071296 SW8260B

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Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG. VDMS4.32

Data Package Completeness Package

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
D 4				2.0		TIC	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>

mfesler

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Validated Form I

Field ID HAR08GW01S007 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 0.25 U U 0.25 10 UG/L c-1,3-Dichloropropene Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L U 0.17 U 0.17 10 Chlorobenzene UG/L Chloroethane 2.3 U U 2.3 25 UG/L U Chloroform 0.46 U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L 1.8 U U 25 UG/L Chlorotrifluoroethylene 1.8 Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L 0.32 U U 25 Hexachloro-1,3-Butadiene 0.32 UG/L Isopropanol 37 U U 37 100 UG/L MS>UCL (none) U 37 U 37 100 UG/L SD>UCL (none) Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L U U Methyl-t-Butyl Ether (MTBE) 0.31 0.31 25 UG/L U U 25 n-Butylbenzene 0.23 0.23 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L MS>UCL (none) 1.5 U U 10 1.5 UG/L SD>UCL (none) p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene J =J 0.37 10 InvalidLabFlag (J) 1.4 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) U U 0.28 tert-Butylbenzene 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 0.91 J =J0.37 5 UG/L InvalidLabFlag (J) Trichlorofluoromethane U U 1.7 1.7 25 UG/L Vinyl Chloride 5.3 0.3 0.5 UG/L

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

Data Quality Evaluation

SDG 16071296 **Method SW8260B-SIM**

Reviewer: bjones7 Date: 8/9/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC

NativeID Type Dilution ABLotValue EBLotValue TBLotValue

WATER

HAR08GW01S007 N 1 Missing Association DP Missing Association DP 19071601 / CAQW2447Q001 / 160712

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dilu	tion ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2447Q001	TB	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 1607129

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

16071296 SW8260B-SIM

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5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	0.9	J	= J	0.35	1	UG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

	6	Method	SW8270C-SIM			
Reviewer: bjon	es7		Date:	8/9/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Sample		mber / FieldID / S	DG			
NativeID	QAQC Type Dilution	ABLotValue	EBL	otValue		TBLotValue
WATER HAR11GW01S007 RD49CGW01S006		issing Association DF		ssociation DP ssociation DP		19071601 / CAQW2447Q001 / 160712 19071601 / CAQW2447Q001 / 160712
1. Case Narrativ Items of Intere	est No items	of concern.				
2. Blank Summa	ary					
Eigld Dlowles	No Field Blanl	ks were found.				
Field Blanks	No Mothed DI	ank detects were	ound.			
Method Blanks	No Method Bi					
Method Blanks						
	plicates					
Method Blanks 3. Spikes and Du	plicates ates No FD Asa					

5. Surrogates All acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

16071296 SW8270C-SIM

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW019	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Bis(2-Ethylhexyl) Phthalate	0.11	J	= J	0.048	9.7	UG/L	InvalidLabFlag (J)
Butyl Benzyl Phthalate	0.052	U	U	0.052	9.7	UG/L	
Diethyl Phthalate	0.21	J	=J	0.052	9.7	UG/L	InvalidLabFlag (J)
Dimethyl Phthalate	0.12	J	=J	0.045	9.7	UG/L	InvalidLabFlag (J)
Di-n-Butyl Phthalate	0.078	U	U	0.078	9.7	UG/L	
Di-n-Octyl Phthalate	0.047	U	U	0.047	9.7	UG/L	
Field ID	RD49CGW01S	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Analyte Bis(2-Ethylhexyl) Phthalate	Result			MDL 0.047	RL 9.6	Units UG/L	ValidationReason (Flag
			Flag				, ,
Bis(2-Ethylhexyl) Phthalate	0.15		Flag =J	0.047	9.6	UG/L	InvalidLabFlag (J)
Bis(2-Ethylhexyl) Phthalate Butyl Benzyl Phthalate	0.15 0.12	Flag J J	Flag =J =J	0.047 0.051	9.6 9.6	UG/L UG/L	InvalidLabFlag (J)
Bis(2-Ethylhexyl) Phthalate Butyl Benzyl Phthalate Diethyl Phthalate	0.15 0.12 0.051	Flag J J U	Flag =J =J U	0.047 0.051 0.051	9.6 9.6 9.6	UG/L UG/L UG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

SDG 16071296	S Method	SW8330A			
SDG 16071296 Reviewer: bjone		Date:	8/9/2016	Matrix: WATER	
Reviewed:	9/2/2016				
Field Samples					
Field blank association	n lot values: LotNumber / FieldI	O / SDG			
NativeID	QAQC Type Dilution ABLotVal	ue 1	EBLotValue	TBLotValue	
WATER					
HAR08GW01S007	N 1 Missing Associatio	n DP Miss	ing Association DP	19071601 / CAQW2447Q	001 / 1607
HAR11GW01S007	N 1 Missing Associatio	n DP Miss	ing Association DP	19071601 / CAQW2447Q	001 / 1607
RD49CGW01S006	N 1 Missing Associatio	n DP Miss	ing Association DP	19071601 / CAQW2447Q	001 / 1607
 Case Narrative Items of Interes Blank Summa 	No items of concern.				
Field Blanks	No Field Blanks were found	l.			
Method Blanks	No Method Blank detects w	ere found.			
3. Spikes and Dup	olicates				
Field Duplica	No FD Associated.				
Laboratory Dupl	icates None in this SDG				
Matrix Spike	No MS's for this SDG. No S	SD's for this SDG. MS R	PD: None for this SI	OG.	
4. Laboratory Co	ntrol Sample All accept	tance criteria were met.			

16071296 SW8330A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.051	U	U	0.051	1.1	UG/L	
1,3-Dinitrobenzene	0.057	U	U	0.057	1.1	UG/L	
2,4,6-Trinitrotoluene	0.029	U	U	0.029	1.1	UG/L	
2,4-Dinitrotoluene	0.044	U	U	0.044	1.1	UG/L	
2,6-Dinitrotoluene	0.059	U	U	0.059	1.1	UG/L	
2-Amino-4,6-DNT	0.068	U	U	0.068	1.1	UG/L	
2-Nitrotoluene	0.045	U	U	0.045	1.1	UG/L	
3-Nitrotoluene	0.052	U	U	0.052	1.1	UG/L	
4-Amino-2,6-DNT	0.061	U	U	0.061	1.1	UG/L	
4-Nitrotoluene	0.06	U	U	0.06	1.1	UG/L	
HMX	0.052	U	U	0.052	1.1	UG/L	
Nitrobenzene	0.063	U	U	0.063	1.1	UG/L	
RDX	0.067	U	U	0.067	1.1	UG/L	
Tetryl	0.076	U	U	0.076	1.1	UG/L	
Field ID	11 A D 11 C W 01	5007					
Ticia ib	HAR11GW01	S007 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.05	U	U	0.05	1.1	UG/L	
1,3-Dinitrobenzene	0.056	U	U	0.056	1.1	UG/L	
2,4,6-Trinitrotoluene	0.029	U	U	0.029	1.1	UG/L	
2,4-Dinitrotoluene	0.043	U	U	0.043	1.1	UG/L	
2,6-Dinitrotoluene	0.058	U	U	0.058	1.1	UG/L	
2-Amino-4,6-DNT	0.067	U	U	0.067	1.1	UG/L	
2-Nitrotoluene	0.044	U	U	0.044	1.1	UG/L	
3-Nitrotoluene	0.052	U	U	0.052	1.1	UG/L	
4-Amino-2,6-DNT	0.06	U	U	0.06	1.1	UG/L	
4-Nitrotoluene	0.059	U	U	0.059	1.1	UG/L	
HMX	0.051	U	U	0.051	1.1	UG/L	
Nitrobenzene	0.062	U	U	0.062	1.1	UG/L	
RDX	0.066	U	U	0.066	1.1	UG/L	
Tetryl	0.074	U	U	0.074	1.1	UG/L	
Field ID	RD49CGW01	\$006					
	KD45CGW01	Final	Lab				
	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Analyte		•		IVIDE	11	•	validationi todoon (i laț
Analyte 1,3,5-Trinitrobenzene	0.052	U	U	0.052	1.2	UG/L	vandation (cason (r lag

mfesler

16071296 SW8330A

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Validated Form I

Field ID	RD49CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
2,4,6-Trinitrotoluene	0.03	U	U	0.03	1.2	UG/L	
2,4-Dinitrotoluene	0.044	U	U	0.044	1.2	UG/L	
2,6-Dinitrotoluene	0.06	U	U	0.06	1.2	UG/L	
2-Amino-4,6-DNT	0.07	U	U	0.07	1.2	UG/L	
2-Nitrotoluene	0.046	U	U	0.046	1.2	UG/L	
3-Nitrotoluene	0.053	U	U	0.053	1.2	UG/L	
4-Amino-2,6-DNT	0.062	U	U	0.062	1.2	UG/L	
4-Nitrotoluene	0.062	U	U	0.062	1.2	UG/L	
HMX	0.053	U	U	0.053	1.2	UG/L	
Nitrobenzene	0.064	U	U	0.064	1.2	UG/L	
RDX	0.069	U	U	0.069	1.2	UG/L	
Tetryl	0.077	U	U	0.077	1.2	UG/L	

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Validated Form I

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

5. Surrogates

No surrogates in this SDG.

SDG 16071296	5 I	Method SW	/9040C			
Reviewer: bjone	es7		Date:	8/9/2016	Matrix:	WATER
Reviewed:	9/2/2016					
Field Samples Field blank association		er / FieldID / SDG				
NativeID	QAQC Type Dilution A	BLotValue	El	3LotValue		TBLotValue
WATER HAR08GW01S007 HAR08GW01S007		g Association DP g Association DP		g Association DP g Association DP		9071601 / CAQW2447Q001 / 160712 9071601 / CAQW2447Q001 / 160712
1. Case Narrative Items of Interes	No itoma of	concern.				
2. Blank Summa	ry					
Field Blanks	No Field Blanks w	vere found.				
Method Blanks	No Method Blank	s were found.				
3. Spikes and Dup Field Duplica	olicates ates No FD Associ	ated.				
Laboratory Dupl	icates All accept	ance criteria were	met.			
Matrix Spike	No MS's for this S	DG. No SD's for	this SDG. MS RP	D: None for this SI	OG.	
4. Laboratory Co.	ntrol Sample	No spikes in this S	SDG. No spike du	pes in this SDG.		

16071296 SW9040C

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Laboratory Control Sample: No spikes in this SDG. No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
pH	6.54		=7c	0.01	0.01	PH UNITS	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

 SDG 16071378
 Method E300.0

 Reviewer: mfesler
 Date: 8/9/2016 Matrix: WATER

 Reviewed: __ 8/26/2016 _____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
ND133GW01S002	N	2 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW01S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW02S002	N	2 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW02S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	2 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	5 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002MS	MS	1		
ND133GW04S002SD	SD	1		

1. Case Narrative Items of Interest

The following items were noted: MS>UCL; SD>UCL

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: Sulfate (MS - ND133GW04S002MS). These SD's were

out of control: Sulfate (SD - ND133GW04S002SD). All RPD acceptance criteria were met.

Matrix Sample ID LR Type Analyte Result MS/MSD Qualifier* Criteria

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WATER		<u>Sulfate</u>			
	ND133GW01S002		170 MG/L	J	MS>UCL
	ND133GW01S002		170 MG/L	J	SD>UCL
	ND133GW02S002		150 MG/L	J	MS>UCL
	ND133GW02S002		150 MG/L	J	SD>UCL
	ND133GW03S002		130 MG/L	J	MS>UCL
	ND133GW03S002		130 MG/L	J	SD>UCL
	ND133GW04S002		190 MG/L	J	MS>UCL
	ND133GW04S002		190 MG/L	J	SD>UCL

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	ND133GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	56			0.52	1	MG/L	
Fluoride	0.25			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	170	J	=D	0.54	2	MG/L	MS>UCL (J)
	170	J	=D	0.54	2	MG/L	SD>UCL (J)
Field ID	ND133GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	60			0.52	1	MG/L	
Fluoride	0.21			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	150	J	=D	0.54	2	MG/L	SD>UCL (J)
	150	J	=D	0.54	2	MG/L	MS>UCL (J)
Field ID	ND133GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	47			0.52	1	MG/L	
Fluoride	0.22			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	130	J	=D	0.54	2	MG/L	MS>UCL (J)
	130	J	=D	0.54	2	MG/L	SD>UCL (J)
Field ID	ND133GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	43			0.52	1	MG/L	
Fluoride	0.23			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	190	J	=D	1.3	5	MG/L	SD>UCL (J)
	190	J	=D	1.3	5	MG/L	MS>UCL (J)

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix

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Data Quality Evaluation

SDG 16	071378	Method	E1625C			
Reviewer:	mfesler		Date:	8/9/2016	Matrix:	WATER
Reviewed:	8/26/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
WAIEN				
ND133GW01S002	N	 Missing Association DP 	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW02S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713

1. Case Narrative
Items of Interest
There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	ND133GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	170			2.8	9.4	NG/L	
Field ID	ND133GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.8	U	U	2.8	9.4	NG/L	
Field ID	ND133GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	57			2.9	9.6	NG/L	
Field ID	ND133GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	6.9	J	=J	2.9	9.6	NG/L	InvalidLabFlag (J)

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071378	Method	SW8015B	
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Reviewer: mfesler Date: 8/9/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2448Q001	ТВ	1		20071601 / CAQW2448Q001 / 160713
CAQW2448Q001MS	MS	1		
CAQW2448Q001SD	SD	1		
ND133GW01S002	N	20 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW01S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW02S002	N	20 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW02S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	20 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	20 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Pac

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	ND133GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	240			8	50	UG/L	
C21-C30	25	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	23	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	290			8	50	UG/L	
Field ID	ND133GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	93			8	50	UG/L	
C21-C30	8	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	100			8	50	UG/L	
Field ID	ND133GW03	S002					
Anglista	Dooult	Final Flag	Lab Flag				
Analyte	Result	ı iug	ı iag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	680			8	50	UG/L	
C21-C30	84			8	50	UG/L	
C30-C40 (TPH as Oil)	44	J	=J	8	50	UG/L	InvalidLabFlag (J)
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	11	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	780			8	50	UG/L	
Field ID	ND133GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
,a., 10							

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Field ID	ND133GW04S002								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
C15-C20	73			8	50	UG/L			
C21-C30	16	J	=J	8	50	UG/L	InvalidLabFlag (J)		
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L			
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L			
C7	50	U	U	8	50	UG/L			
C8-C11	34	J	=J	8	50	UG/L	InvalidLabFlag (J)		
C8-C30	120			8	50	UG/L			

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

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Data Quality Evaluation

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2448Q001	TB	1		20071601 / CAQW2448Q001 / 160713
ND133GW01S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW01S002MS	MS	1		
ND133GW01S002SD	SD	1		
ND133GW02S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW03S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713
ND133GW04S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713

1. Case Narrative Items of Interest

The following items were noted: 2CLEVE; LCS<LCL; MS<LCL; SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - ND133GW01S002MS),

Pentachloroethane (MS - ND133GW01S002MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - ND133GW01S002SD), Pentachloroethane (SD -

ND133GW01S002SD). For high recoveries and sample results ND, no flagging applied to

those analytes. All RPD acceptance criteria were met.

Matrix Sample ID LR Type Analyte Result MS/MSD Qualifier* Criteria

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WAIEK	2-Unio	proetnyi vinyi ⊑tner		
	ND133GW01S002	16 UG/L	R	MS <lcl< td=""></lcl<>
	ND133GW01S002	16 UG/L	R	SD <lcl< td=""></lcl<>
WATER	<u>Penta</u>	<u>chloroethane</u>		
	ND133GW01S002	1.5 UG/L	none	MS>UCL
	ND133GW01S002	1.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG. Since recovery high for t-1,3-Dichloropropene and sample results were ND, no flagging applied to this analyte.

Matrix	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246237BS	2-Chloroethyl Vinyl Ether	63	70	120
WATER	BS	09916246237BS	Bromomethane	61	70	120
WATER	BS	09916246237BS	t-1,3-Dichloropropene	125	70	120
WATER	BS	09916246238BS	2-Chloroethyl Vinyl Ether	53	70	120
WATER	BS	09916246238BS	Bromomethane	63	70	120
WATER	BS	09916246238BS	t-1,3-Dichloropropene	124	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

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Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	ND133GW018	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	9			0.48	5	UG/L	

Field ID	ND133GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	110			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.23	U	U	0.23	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	MS>UCL (none)
remacmoroculane	1.5	U	U	1.5	10	UG/L	SD>UCL (none)
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	SD>CCL (Holic)
sec-Butylbenzene	0.10	U	U	0.16	25	UG/L	
Styrene	0.23	U	U	0.23	10	UG/L	
t-1,2-Dichloroethene	0.17	J	=J	0.17	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	_J U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L UG/L	LCS>UCL (Holle)
Tetrachloroethene	0.28	U	U	0.28	5	UG/L UG/L	
Toluene							Installation (I)
	1.9	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	4.5	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	ND133GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	(
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.38	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.45	U	U	0.45	10	UG/L	
1,2,3-Trichlorobenzene	0.40	U	U	0.40	25	UG/L	
		U	U	0.51	5	UG/L UG/L	
1.2.3-Trichloropropaga							
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.64 0.5	U	U	0.5	25	UG/L	

Field ID ND133GW02S002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U 1,2-Dibromo-3-Chloropropane 1.2 U 1.2 25 UG/L 1.2-Dibromoethane 0.36 U U 0.36 10 UG/L U 1,2-Dichlorobenzene 0.46 U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U U 1,3-Dichlorobenzene 0.4 0.4 10 UG/L 0.3 U U 0.3 10 UG/L 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 0.36 U U 0.36 5 2,2-Dichloropropane UG/L 2-Butanone 2.2 U U 2.2 50 UG/L U U 25 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 UG/L 2-Chloroethyl Vinyl Ether 16 R U 25 UG/L LCS<LCL (UJ) 16 U 16 R 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L U U 50 2-Hexanone 2.1 2.1 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L U 4-Methyl-2-Pentanone 4.4 U 4.4 25 UG/L 55 50 Acetone 6 UG/L Benzene 0.29 J =J0.14 10 UG/L InvalidLabFlag (J) Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L Bromodichloromethane 0.21 U U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L UJ Bromomethane 3.9 U 3.9 25 UG/L LCS<LCL (UJ) c-1,2-Dichloroethene 2.4 J =J0.48 5 UG/L InvalidLabFlag (J) 0.25 U 0.25 10 c-1,3-Dichloropropene U UG/L Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L Chlorobenzene 0.17 U U 0.1710 UG/L Chloroethane 2.3 U U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L 0.32 U 0.32 Hexachloro-1,3-Butadiene U 25 UG/L 97 Isopropanol J =J37 100 UG/L InvalidLabFlag (J) U Isopropylbenzene 0.58 U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L 0.17 U U 0.17 10 UG/L Styrene

Field ID	ND133GW02	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	validationiteason (i lag
t-1,3-Dichloropropene	0.37	U	U	0.37	10	UG/L UG/L	LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L UG/L	LCS/UCL (Holle)
Tetrachloroethene	0.28	U	U	0.28	5	UG/L	
Toluene	2.9	J	=J	0.39	10	UG/L UG/L	InvalidLabFlag (J)
Trichloroethene		J	_J =J	0.24	5	UG/L UG/L	
Trichlorofluoromethane	0.55 1.7	J U	=J U	1.7	25	UG/L UG/L	InvalidLabFlag (J)
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	ND133GW03	2002					
	ND133G W03	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
, ,	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	, ,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	70	-	-	6	50	UG/L	
Benzene	0.27	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>

Field ID	ND133GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
c-1,2-Dichloroethene	38			0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	73	J	= J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.23	U	U	0.23	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	1.1	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	Ecs. CCE (none)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	2	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	7.3	J	_,	0.37	5	UG/L	invaridador ing (3)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.7 1.1	O	O	0.3	0.5	UG/L	
v myr emoride				0.5	0.5	CG/E	
Field ID	ND133GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	. •
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,5 IIICIIIOIOPIOPIIIC	5.04	C	C	0.07	5	C 3/ L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	

Field ID	ND133GW04	S002					
A 1.	D 1	Final Flag	Lab Flag				
Analyte	Result	гіау	riay	MDL	RL	Units	ValidationReason (Flag
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
•	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	. ,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	71			6	50	UG/L	
Benzene	0.19	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	invariozator ing (5)
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.43	U	U	0.40	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	21	O3	O	0.48	5	UG/L	ECS\ECE (O3)
c-1,3-Dichloropropene	0.25	U	U	0.48	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.23	U	U	0.23	10	UG/L UG/L	
Chloroethane	2.3						
		U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	

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Field ID	ND133GW04S002							
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)	
t-1,2-Dichloroethene	1.4	J	=J	0.37	10	UG/L	InvalidLabFlag (J)	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)	
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L		
Tetrachloroethene	0.39	U	U	0.39	5	UG/L		
Toluene	2.1	J	=J	0.24	10	UG/L	InvalidLabFlag (J)	
Trichloroethene	8			0.37	5	UG/L		
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L		
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L		

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071378	Method	SW8260B-SIM			
Reviewer: mfesler		Date:	8/9/2016	Matrix:	WATER
Reviewed: 8/26/2016	_				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC						
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue		
WATER						
CAQW2448Q001	TB	1		20071601 / CAQW2448Q001 / 160713		
ND133GW01S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713		
ND133GW02S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713		
ND133GW03S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713		
ND133GW04S002	N	1 Missing Association DP	Missing Association DP	20071601 / CAQW2448Q001 / 160713		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- 4. Laboratory Control Sample All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	ND133GW01	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	8.6			0.35	1	UG/L	
Field ID	ND133GW02	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	28			0.35	1	UG/L	
Field ID	ND133GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	37			0.35	1	UG/L	
Field ID	ND133GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla

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NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071392		Method	E1625C					
Reviewer:	bjones7		Date:	8/9/2016	Matrix:	WATER		
Reviewed:	9/2/2016							

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC						
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue		
-						
WATER						
SP881CGW01S005	Ν	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713		
SP881GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713		
SP890CGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713		
SP890GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713		

1. Case Narrative
Items of Interest
No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

16071392 E1625C

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	SP881CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	·
Field ID	SP881GGW01	.S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	
Field ID	SP890CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	3.1	U	U	3.1	10	NG/L	
Field ID	SP890GGW01	.S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	· ·

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Validated Form I

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071392 Method SW8260B

Reviewer: bjones7 Date: 8/9/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	oilution ABLotValue	EBLotValue	TBLotValue
WATER				
SP881CGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP881GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890CGW01S005	N	5 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890CGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890GGW01S005	N	10 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713

Associated Field Blanks (other SDGs)

		_	-
	А	.,	
~		v	_

NativeID	Type Dil	ution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2448Q001	ТВ	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 1607137

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246237BS	2-Chloroethyl Vinyl Ether	63	70	120
WATER	BS	09916246237BS	Bromomethane	61	70	120
WATER	BS	09916246237BS	t-1,3-Dichloropropene	125	70	120
WATER	BS	09916246238BS	2-Chloroethyl Vinyl Ether	53	70	120
WATER	BS	09916246238BS	Bromomethane	63	70	120
WATER	BS	09916246238BS	t-1,3-Dichloropropene	124	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

SP890CGW01S005, SP890GGW01S005.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

SP890CGW01S005, SP890GGW01S005. Samples were re-analyzed on a diluted basis due

to concentration of target analytes

16071392 SW8260B

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COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	SP881CGW01	S005					
Analyte	Result	Final Flag	Lab Flag				
<u> </u>	Resuit	- lug	ı iug	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
$1,1,2\text{-}Trichloro\text{-}1,2,2\text{-}Trifluoroethane}$	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	17			0.48	5	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	

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Field ID	SP881CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	, ,
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	160			37	100	UG/L	InvalidLabFlag (=)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	2 ()
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.23	U	U	0.23	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.16	U	U	0.16	25	UG/L	
Styrene	0.23	U	U	0.23	10	UG/L UG/L	
t-1,2-Dichloroethene	2	J	=J	0.17	10	UG/L UG/L	InvalidI abElag (I)
t-1,3-Dichloropropene	0.25	J U	=J U	0.37	10	UG/L UG/L	InvalidLabFlag (J) LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L UG/L	LCS>UCL (none)
Tetrachloroethene	0.28	U	U	0.28	5	UG/L UG/L	
Toluene				0.39	10	UG/L UG/L	InvalidI ahElaa (I)
	0.33	J	=J				InvalidLabFlag (J)
Trichloroethene Trichlorofluoromethane	0.37	U	U	0.37	5	UG/L	
	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.36	J	=J	0.3	0.5	UG/L	InvalidLabFlag (J)
Field ID	SP881GGW01						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1.10 T. 11	0.38	U	U	0.38	10	UG/L	
1,1,2-Trichloroethane		U	U	0.28	10	UG/L	
	0.28	U					
1,1-Dichloroethane	0.28 0.43		U	0.43	25	UG/L	
1,1-Dichloroethane 1,1-Dichloroethene	0.28 0.43 0.46	U U	U U	0.43 0.46	25 10	UG/L UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.43 0.46	U U	U	0.46	10	UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.43 0.46 0.51	U U U	U U	0.46 0.51	10 25	UG/L UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	0.43 0.46 0.51 0.64	U U U U	U U U	0.46 0.51 0.64	10 25 5	UG/L UG/L UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.43 0.46 0.51 0.64 0.5	U U U U	U U U U	0.46 0.51 0.64 0.5	10 25 5 25	UG/L UG/L UG/L UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene	0.43 0.46 0.51 0.64 0.5 0.36	U U U U U	U U U U	0.46 0.51 0.64 0.5 0.36	10 25 5 25 10	UG/L UG/L UG/L UG/L UG/L	
1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.43 0.46 0.51 0.64 0.5	U U U U	U U U U	0.46 0.51 0.64 0.5	10 25 5 25	UG/L UG/L UG/L UG/L	

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Field ID	SP881GGW01	SP881GGW01S005							
		Final	Lab						
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)		
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L			
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L			
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L			
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L			
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L			
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L			
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L			
2-Butanone	2.2	U	U	2.2	50	UG/L			
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L			
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
	16	R	U	16	25	UG/L	2Cleve (R)		
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L			
2-Hexanone	2.1	U	U	2.1	50	UG/L			
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L			
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L			
Acetone	6	U	U	6	50	UG/L			
Benzene	0.14	U	U	0.14	10	UG/L			
Bromobenzene	0.3	U	U	0.3	25	UG/L			
Bromochloromethane	0.48	U	U	0.48	25	UG/L			
Bromodichloromethane	0.21	U	U	0.21	10	UG/L			
Bromoform	0.5	U	U	0.5	25	UG/L			
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>		
c-1,2-Dichloroethene	23			0.48	5	UG/L	InvalidLabFlag (=)		
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	6 ()		
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L			
Chlorobenzene	0.17	U	U	0.17	10	UG/L			
Chloroethane	2.3	U	U	2.3	25	UG/L			
Chloroform	0.46	U	U	0.46	10	UG/L			
Chloromethane	1.8	U	U	1.8	25	UG/L			
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L			
Dibromochloromethane	0.25	U	U	0.25	10	UG/L			
Dibromomethane	0.46	U	U	0.46	5	UG/L			
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L			
Ethylbenzene	0.14	U	U	0.14	10	UG/L			
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L			
Isopropanol	190			37	100	UG/L	InvalidLabFlag (=)		
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	invariables sug ()		
Methylene Chloride	0.64	U	U	0.64	25	UG/L			
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L			
n-Butylbenzene	0.23	U	U	0.23	25	UG/L			
n-Propylbenzene	0.17	U	U	0.17	10	UG/L			
o-Xylene	0.23	U	U	0.23	10	UG/L			
p/m-Xylene	0.3	U	U	0.3	10	UG/L			
Pentachloroethane	1.5	U	U	1.5	10	UG/L			
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L			
sec-Butylbenzene	0.25	U	U	0.16	25	UG/L			
Styrene	0.23	U	U	0.23	10	UG/L			
t-1,2-Dichloroethene	5	J	= J	0.17	10	UG/L UG/L	InvalidLabFlag (J)		
t-1,3-Dichloropropene	0.25	J U	_J U	0.37	10	UG/L	LCS>UCL (none)		
tert-Butylbenzene	0.23	U	U		25	UG/L	LCS/UCL (HOHE)		
tert-Butymenzene	0.28	U	U	0.28	23	UU/L			

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Validated Form I

Field ID	SP881GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	SP890CGW01	S005					
	510,000,000	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	,
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.41	U	U	0.41	25	UG/L	
1,1,2-Trichloroethane	0.43	U	U	0.38	10	UG/L	
1.1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	1.4	J	=J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	_J U	0.46	10	UG/L	invandLabi lag (3)
1,2,3-Trichlorobenzene	0.40	U	U	0.40	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.64	U	U	0.04	25	UG/L UG/L	
	0.36	U	U	0.36	10	UG/L UG/L	
1,2,4-Trimethylbenzene	1.2			1.2	25	UG/L UG/L	
1,2-Dibromo-3-Chloropropane 1,2-Dibromoethane	0.36	U U	U U	0.36	10	UG/L UG/L	
	0.36	U			10	UG/L UG/L	
1,2-Dichlorobenzene 1,2-Dichloroethane	0.46	U	U	0.46 0.24	5	UG/L UG/L	
		U	U	0.24	10	UG/L UG/L	
1,2-Dichloropropane	0.42		U				
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	400		=D	2.4	25	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	

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Validated Form I

Field ID	SP890CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	()
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	88	J	=J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	invariozaci ing (c)
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.23	U	U	0.23	10	UG/L	
o-Xylene	0.17	U	U	0.17	10	UG/L	
p/m-Xylene	0.23	U	U	0.23	10	UG/L	
Pentachloroethane							
	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	T 11 T 1 T 1
t-1,2-Dichloroethene	24	**	**	0.37	10	UG/L	InvalidLabFlag (=)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	150			0.37	5	UG/L	InvalidLabFlag (=)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.52			0.3	0.5	UG/L	InvalidLabFlag (=)
Field ID	SP890GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
					10	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	COL	
	0.3 0.41	U U	U U	0.3 0.41	10	UG/L	
1,1,1-Trichloroethane	0.41						
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane	0.41	U	U	0.41 0.45	10	UG/L	
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane	0.41 0.45 0.38	U U U	U U U	0.41 0.45 0.38	10 25 10	UG/L UG/L UG/L	
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane	0.41 0.45 0.38 0.28	U U	U U	0.41 0.45 0.38 0.28	10 25 10 10	UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene	0.41 0.45 0.38	1 N O O	U U U U	0.41 0.45 0.38	10 25 10	UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.41 0.45 0.38 0.28 2.9 0.46	1 U U U	U U U U =J U	0.41 0.45 0.38 0.28 0.43 0.46	10 25 10 10 25 10	UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.41 0.45 0.38 0.28 2.9 0.46 0.51	n 1 n n n	U U U U =J U	0.41 0.45 0.38 0.28 0.43 0.46 0.51	10 25 10 10 25 10 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	0.41 0.45 0.38 0.28 2.9 0.46 0.51	n n 1 n n	U U U =J U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51	10 25 10 10 25 10 25 5	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.41 0.45 0.38 0.28 2.9 0.46 0.51 0.64 0.5	U U U J U U U	U U U =J U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5	10 25 10 10 25 10 25 5 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene 1,2,4-Trichlorobenzene	0.41 0.45 0.38 0.28 2.9 0.46 0.51 0.64 0.5 0.36	u u u u u u u u u u u u	U U U =J U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36	10 25 10 10 25 10 25 5 5 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane ,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.41 0.45 0.38 0.28 2.9 0.46 0.51 0.64 0.5	U U U J U U U	U U U =J U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5	10 25 10 10 25 10 25 5 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	InvalidLabFlag (J)

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Field ID	SP890GGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
, ,	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	. ,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	650	C.	=D	4.8	50	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	mvanaLaor lag (=)
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	86	J	=J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	_, U	0.58	100	UG/L	invandLabi iag (3)
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.23	10	UG/L	
o-Xylene	0.23	U	U	0.17	10	UG/L	
p/m-Xylene	0.23	U	U	0.23	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.16	U	U	0.16	25	UG/L	
Styrene Styrene	0.23	U	U	0.23	10	UG/L UG/L	
t-1,2-Dichloroethene	24	U	U	0.17	10	UG/L UG/L	InvalidLabFlag (=)
t-1,3-Dichloropropene	0.25	U	U	0.37	10	UG/L UG/L	LCS>UCL (none)
tert-Butylbenzene	0.23	U	U	0.23	25	UG/L UG/L	LC5/UCL (HUHE)
tert-Butymenzene	0.28	U	U	0.20	23	UG/L	

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Field ID	SP890GGW01S005								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
Tetrachloroethene	0.39	U	U	0.39	5	UG/L			
Toluene	0.24	U	U	0.24	10	UG/L			
Trichloroethene	340		=D	3.7	50	UG/L	InvalidLabFlag (=)		
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L			
Vinyl Chloride	3.6			0.3	0.5	UG/L	InvalidLabFlag (=)		

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071392 **Method** SW8260B-SIM

Reviewer: bjones7 Date: 8/9/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	Dilution ABLotValue	EBLotValue	TBLotValue
WATER				
SP881CGW01S005	Ν	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP881GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890CGW01S005	Ν	10 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890CGW01S005	Ν	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890GGW01S005	Ν	10 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713
SP890GGW01S005	N	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 160713

Associated Field Blanks (other SDGs)

QAQC

NativeID	Type Diluti	on ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2448Q001	ТВ	1 Missing Association SEEP	Missing Association SEEP	20071601 / CAQW2448Q001 / 1607137

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	SP881CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.56	J	= J	0.35	1	UG/L	InvalidLabFlag (J)
Field ID	SP881GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	0.62	J	= J	0.35	1	UG/L	InvalidLabFlag (J)
Field ID	SP890CGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	3.5	U	U	3.5	10	UG/L	
Field ID	SP890GGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	3.5	U	U	3.5	10	UG/L	,

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071456		Method	SW8315A			
Reviewer: mfesler			Date	e: 8/31/2016	Matrix:	WATER
Reviewed: 8/3	1/2016	_				
Field Samples Field blank association lo	t values: LotNu	mber / FieldID /	SDG			
	AQC Type Dilution	ABLotValue	2	EBLotValue		TBLotValue
WATER HAR05GW01S006	N 1 Mi	issing Association I	DP	Missing Association DP	1	5071601 / CAQW2445Q001 / 16071
1. Case Narrative Items of Interest	The follo	wing items wer	re noted: HTp>U0	CL		
2. Blank Summary						
Field Blanks	No Field Blank	ks were found.				
Method Blanks	No Method Bla	ank detects wer	e found.			
3. Spikes and Duplic	cates					
Field Duplicate	S No FD Ass	sociated.				
Laboratory Duplica	ates None i	in this SDG				
Matrix Spike	No MS's for th	is SDG. No SI	D's for this SDG.	MS RPD: None for this S	SDG.	
4. Laboratory Cont	rol Sample	All acceptar	nce criteria were 1	net.		
5. Surrogates	All acce	ptance criteria	were met.			
6. Tuning and Mass Calibration	N/A					

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7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding TimeThese NativeIDs exceeded holding time: HAR05GW01S006. Hydrazine samples were derivatized 1

day past holding time due to instrument downtime issues. (No problems with Formaldehyde)

Field ID LabsampleID AnalysisDate ExtractDate Sample Date Method Time Actual HT

HAR05GW01S006 8477962 8/6/2016 7/26/2016 7/15/2016 10 11

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV. Holding Time: These NativeIDs exceeded holding time: HAR05GW01S006.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	Field ID HAR05GW01S006								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)		
1,1-DIMETHYLHYDRAZINE	0.8	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)		
FORMALDEHYDE	50	U	U	20	50	UG/L			
HYDRAZINE	0.2	UJ	U	0.06	0.2	UG/L	HTp>UCL (UJ)		
METHYLHYDRAZINE	0.8	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)		

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryHTp>UCLHolding time exceededHoldingTime

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All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

SDC 4007445	7 Mothod 6	SW924E A			_
SDG 1607145 Reviewer: mfes Reviewed:		SW8315A Date:	8/31/2016	Matrix: V	VATER
Field Sample Field blank association	es on lot values: LotNumber / FieldID / SD	og			_
NativeID	QAQC Type Dilution ABLotValue	I	EBLotValue	T	BLotValue
WATER RD05CGW01S006 WS04AGW01D006 WS04AGW01S006	N 1 Missing Association DP FD 1 Missing Association DP N 1 Missing Association DP	Miss	ing Association DP ing Association DP ing Association DP	1407	1601 / CAQW2444Q001 / 1607 1601 / CAQW2444Q001 / 1607 1601 / CAQW2444Q001 / 1607
1. Case Narrative Items of Intere	The following items were n	oted: HTp>UCL			
2. Blank Summa	nry				
Field Blanks	No Field Blanks were found.				
Method Blanks	No Method Blank detects were for	ound.			
3. Spikes and Du Field Duplic	-	net.			
Laboratory Dup Matrix Spike	licates None in this SDG No MS's for this SDG. No SD's f	for this SDG.			
4. Laboratory Co	ontrol Sample All acceptance	criteria were met.			

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration

No DV

Continuing Calibration

No DV

9. Holding Time

These NativeIDs exceeded holding time: RD05CGW01S006, WS04AGW01D006,

WS04AGW01S006. Hydrazine samples were derivatized 1 day past holding time due to instrument

downtime issues. (No problems with Formaldehyde)

Field ID	LabsampleID	AnalysisDate	ExtractDate	Sample Date	Method Ti	me Actual HT
RD05CGW01S006	8476280	8/6/2016	7/26/2016	7/14/2016	10	12
WS04AGW01D006	8476281	8/6/2016	7/26/2016	7/14/2016	10	12
WS04AGW01S006	8476282	8/6/2016	7/26/2016	7/14/2016	10	12

10. Confirmation

N/A

11. Summary

General Comments

These NativeIDs exceeded holding time: RD05CGW01S006, WS04AGW01D006,

WS04AGW01S006. Hydrazine samples were derivatized 1 day past holding time due to instrument

downtime issues. (No problems with Formaldehyde)

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05CGW01	S006 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	30	J	J	20	50	UG/L	
Field ID	WS04AGW01	D006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	100			20	50	UG/L	
Field ID	WS04AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	120			20	50	UG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryHTp>UCLHolding time exceededHoldingTime

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 1607145	8	Method SW	8315A			
Reviewer: mfes	sler		Date:	8/31/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Sample Field blank associatio		nber / FieldID / SDG				
NativeID	QAQC Type Dilution	ABLotValue	E	BLotValue		TBLotValue
WATER RD05AGW01S006 RD05BGW01S007		ssing Association DP		ng Association DP ng Association DP		3071601 / CAQW2443Q001 / 16070 3071601 / CAQW2443Q001 / 16070
 Case Narrative Items of Interes Blank Summa 	est The follow	wing items were noted	: HTp>UCL			
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	nk detects were found				
3. Spikes and Du Field Duplic	plicates ates No FD Ass	ociated.				
Laboratory Dup Matrix Spike		n this SDG s SDG. No SD's for tl	nis SDG.			
4. Laboratory Co	ontrol Sample	All acceptance crite	eria were met.			

5. Surrogates All acceptance criteria were met.

16071458 SW8315A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration

No DV

Continuing Calibration

No DV

9. Holding Time

These NativeIDs exceeded holding time: RD05AGW01S006, RD05BGW01S007. Hydrazine samples were derivatized 1 day past holding time due to instrument downtime issues. (No problems with Formaldehyde)

Field ID	LabsampleID	AnalysisDate	ExtractDate	Sample Date	Method Ti	me Actual HT
RD05AGW01S006	8474395	8/6/2016	7/26/2016	7/13/2016	10	13
RD05BGW01S007	8474396	8/6/2016	7/26/2016	7/13/2016	10	13

10. Confirmation

N/A

11. Summary

General Comments

These NativeIDs exceeded holding time: RD05AGW01S006, RD05BGW01S007. Hydrazine samples were derivatized 1 day past holding time due to instrument downtime issues. (No problems with Formaldehyde)

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD05AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	20	U	U	20	50	UG/L	
Field ID	RD05BGW01	S007					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	UJ	U	0.25	0.8	UG/L	HTp>UCL (UJ)
FORMALDEHYDE	32	J	J	20	50	UG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryHTp>UCLHolding time exceededHoldingTime

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 16071587 Method E300.0

Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC NativeID Type Dilution ABLotValue			EBLotValue	TBLotValue	
WATER					
C5GW04S002	N	2 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW04S002MS	MS	1			
C5GW04S002SD	SD	1			
C5GW05D002	FD	2 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW05D002	FD	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW05S002	N	2 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW06S002	N	2 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
C5GW06S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
ND132GW03S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
ND132GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
ND132GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
ND137AGW01S002	N	10 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	
ND137AGW01S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715	

1. Case Narrative Items of Interest

The following items were noted: MS>UCL; SD>UCL

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

16071587 E300.0

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Laboratory Duplicates None in this SDG

Matrix Spike

These MS's were out of control: Sulfate (MS - C5GW04S002MS). These SD's were out of control: Sulfate (SD - C5GW04S002SD). All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		Sulfa	ate_			
	C5GW04S002			150 MG/L	J	MS>UCL
	C5GW04S002			150 MG/L	J	SD>UCL
	C5GW05D002			140 MG/L	J	MS>UCL
	C5GW05D002			140 MG/L	J	SD>UCL
	C5GW05S002			140 MG/L	J	MS>UCL
	C5GW05S002			140 MG/L	J	SD>UCL
	C5GW06S002			170 MG/L	J	MS>UCL
	C5GW06S002			170 MG/L	J	SD>UCL

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

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Forms Review/ Items of Interest

No samples were excluded for dilutions or re-extractions.

COC Review

Sample collection time per sample label for C5GW05S002

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

		. ,					
Field ID	C5GW04S0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	44			0.52	1	MG/L	
Fluoride	0.27			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	150	J	=D	0.54	2	MG/L	MS>UCL (J)
	150	J	=D	0.54	2	MG/L	SD>UCL (J)
Field ID	C5GW05D0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	51			0.52	1	MG/L	
Fluoride	0.36			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	140	J	=D	0.54	2	MG/L	MS>UCL (J)
	140	J	=D	0.54	2	MG/L	SD>UCL (J)
Field ID	C5GW05S0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	51			0.52	1	MG/L	
Fluoride	0.27			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	140	J	=D	0.54	2	MG/L	MS>UCL (J)
	140	J	=D	0.54	2	MG/L	SD>UCL (J)
Field ID	C5GW06S0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	42			0.52	1	MG/L	
Fluoride	0.18			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
0.10	170	J	=D	0.54	2	MG/L	SD>UCL (J)
Sulfate	4=0	J	=D	0.54	2	MG/L	MS>UCL (J)
Sulfate	170						
Field ID							
	ND132GW03		Lab				

Field ID	ND132GW038	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	29			0.52	1	MG/L	
Fluoride	0.3			0.027	0.1	MG/L	
Nitrate (as N)	0.065	J	=J	0.053	0.1	MG/L	InvalidLabFlag (J)
Sulfate	50			0.27	1	MG/L	
Field ID	ND132GW04	S002					
	1,21020,101,	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	34			0.52	1	MG/L	validationi (cason (r ia)
Fluoride	0.3			0.027	0.1	MG/L MG/L	
Nitrate (as N)	0.053	U	U	0.027	0.1	MG/L MG/L	
Sulfate	65	U	U	0.033	1	MG/L MG/L	
Sunate				0.27	1	WIG/L	
Field ID	ND132GW05	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	36			0.52	1	MG/L	
Fluoride	0.27			0.027	0.1	MG/L	
Nitrate (as N)	0.76			0.053	0.1	MG/L	
Sulfate	94			0.27	1	MG/L	
Field ID	ND137AGW01	1S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Chloride	220		=D	5.2	10	MG/L	InvalidLabFlag (=)
Fluoride	0.26			0.027	0.1	MG/L	
Nitrate (as N)	0.11			0.053	0.1	MG/L	
Sulfate	450		=D	2.7	10	MG/L	InvalidLabFlag (=)

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071587	Method	E1625C			
Review	ver: mfesler		Date:	8/11/2016	Matrix:	WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

QAQC						
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue		
WATER						
C5GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
C5GW05D002	FD	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
C5GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
C5GW06S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
ND132GW03S002	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
ND132GW04S002	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
ND132GW05S002	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		
ND137AGW01S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

16071587 E1625C

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validatiion

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

COC Review

Interest

Sample collection time per sample label for C5GW05S002

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	C5GW04S00)2					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.8	U	U	2.8	9.4	NG/L	
Field ID	C5GW05D00)2					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	35			2.9	9.6	NG/L	
Field ID	C5GW05S00						
	5 "	Final Flag	Lab Flag				
Analyte	Result	гіау	гіау	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	36			2.9	9.6	NG/L	
Field ID	C5GW06S00)2					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	11			2.8	9.4	NG/L	
Field ID	ND132GW03S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	ND132GW04S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.8	U	U	2.8	9.4	NG/L	
Field ID	ND132GW05S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)

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Validated Form I

Field ID	ND137AGW01	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	6.6	J	=J	2.9	9.6	NG/L	InvalidLabFlag (J)

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071587	Method	SW8015B
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Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
C5GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW04S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW04S002MS	MS	1		
C5GW04S002SD	SD	1		
C5GW05D002	FD	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05D002	FD	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW06S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW06S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
CAQW2456Q001	TB	1		22071601 / CAQW2456Q001 / 160715
ND132GW03S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW03S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW04S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW05S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND137AGW01S002	N	20 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND137AGW01S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715

1. Case Narrative Items of Interest

The following items were noted: Interference

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

16071587 SW8015B

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Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qua	lifier* Criteria
WATER		<u>C4-0</u>	C12 (TPH as Ga	<u>as)</u>		
	C5GW05D002		8	9 UG/L	U	Interference
	C5GW05S002		7	'2 UG/L	U	Interference
	C5GW06S002		6	1 UG/L	U	Interference
	ND132GW03S00	02	1	50 UG/L	U	Interference
	ND132GW05S00	02	1	80 UG/L	U	Interference

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4 32

Data Package Completeness Package was complete for level V validation

16071587 SW8015B

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Forms Review/ Items of Interest

Interference present in samples; influence from high levels of TCE, cis-1,2-DCE in samples. No Gas pattern present. Data flagged as non-detect.

COC Review

Sample collection time per sample label for C5GW05S002

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	C5GW04S0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	87			8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	12	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	99			8	50	UG/L	
Field ID	C5GW05D0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	910			8	50	UG/L	
C21-C30	120			8	50	UG/L	
C30-C40 (TPH as Oil)	21	J	=J	8	50	UG/L	InvalidLabFlag (J)
C4-C12 (TPH as Gas)	89	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	12	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	1000			8	50	UG/L	
Field ID	C5GW05S0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
C12-C14	50	U	U	8	50	UG/L	
C15-C20	820			8	50	UG/L	
C21-C30	120			8	50	UG/L	
C30-C40 (TPH as Oil)	28	J	=J	8	50	UG/L	InvalidLabFlag (J)
C4-C12 (TPH as Gas)	72	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	23	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	960			8	50	UG/L	
Field ID	C5GW06S0	002					
Field ID	C5GW06S0	002 Final	Lab				
Field ID Analyte	C5GW06S0		Lab Flag	MDL	RL	Units	ValidationReason (Flag

Field ID	C5GW06S0	02					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
-	540			8		UG/L	validationi (eason (i la
C15-C20	540	т			50		Leaded abelian (I)
C21-C30	28	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	61	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	49	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	610			8	50	UG/L	
Field ID	ND132GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
							validationineason (Fla
C12-C14	50	U	U	8	50	UG/L	
C15-C20	32	J	=J	8	50	UG/L	InvalidLabFlag (J)
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	150	U	=b	48	50	UG/L	Interference (U)
C7	50	U	U	8	50	UG/L	
C8-C11	11	J	=J	8	50	UG/L	InvalidLabFlag (J)
C8-C30	43	J	= J	8	50	UG/L	InvalidLabFlag (J)
Field ID	ND132GW04	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
C12-C14	50	U	U	8	50	UG/L	
C12-C14 C15-C20	39	J	= J	8	50	UG/L UG/L	InvalidLabFlag (J)
C13-C20 C21-C30	50	U	_J U	8	50	UG/L UG/L	ilivalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L UG/L	
		U	U				
C4-C12 (TPH as Gas)	56		T T	48	50	UG/L	
C7 C8-C11	50	U	U	8	50	UG/L	
C8-C11 C8-C30	48 88	J	=J	8	50 50	UG/L UG/L	InvalidLabFlag (J)
Field ID	ND132GW05		Loh				
		Final	Lab Flag				
Field ID Analyte	ND132GW05		Lab Flag	MDL	RL	Units	ValidationReason (Fla
		Final		MDL 8	RL 50	Units UG/L	ValidationReason (Fla
Analyte	Result	Final Flag	Flag				ValidationReason (Fla
Analyte C12-C14	Result 50	Final Flag	Flag	8	50	UG/L	ValidationReason (Fla
Analyte C12-C14 C15-C20	Result 50 1400	Final Flag	Flag	8	50 50	UG/L UG/L	ValidationReason (Fla
Analyte C12-C14 C15-C20 C21-C30	Result 50 1400 120	Final Flag U	Flag U	8 8 8	50 50 50	UG/L UG/L UG/L	
Analyte C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil)	70 1400 120 15	Final Flag U J	Flag U =J	8 8 8	50 50 50 50	UG/L UG/L UG/L UG/L	InvalidLabFlag (J)
Analyte C12-C14 C15-C20 C21-C30 C30-C40 (TPH as Oil) C4-C12 (TPH as Gas)	70 1400 120 15 180	Final Flag U J U	Flag U =J =b	8 8 8 8	50 50 50 50 50	UG/L UG/L UG/L UG/L UG/L	•

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Field ID	ND137AGW01	1S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	50	U	U	8	50	UG/L	
C15-C20	50	U	U	8	50	UG/L	
C21-C30	50	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	50	U	U	48	50	UG/L	
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	50	U	U	8	50	UG/L	

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
Interference	Indicates the presence of quantitative interference	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG	16071587	Method	SW8260B

Reviewer: mfesler Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 8/26/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
C5GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW04S002MS	MS	1		
C5GW04S002SD	SD	1		
C5GW05D002	FD	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW06S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
CAQW2456Q001	TB	1		22071601 / CAQW2456Q001 / 160715
ND132GW03S002	N	5 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW03S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW05S002	N	5 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND137AGW01S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715

1. Case Narrative Items of Interest

The following items were noted: 2CLEVE; LCS<LCL; MS<LCL, SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

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Matrix Spike

These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - C5GW04S002MS),

Pentachloroethane (MS - C5GW04S002MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - C5GW04S002SD), Pentachloroethane (SD -

C5GW04S002SD). For high recoveries and sample results ND, no flagging applied to those

analytes. All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qual	ifier* Criteria
WATER		<u>2-Cl</u>	nloroethyl Vinyl	<u>Ether</u>		
	C5GW04S002			16 UG/L	R	MS <lcl< td=""></lcl<>
	C5GW04S002			16 UG/L	R	SD <lcl< td=""></lcl<>
WATER		<u>Pen</u>	<u>tachloroethane</u>			
	C5GW04S002			1.5 UG/L	none	MS>UCL
	C5GW04S002			1.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results ND, no flagging applied to those analytes. No spike dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246239BS	2-Chloroethyl Vinyl Ether	67	70	120
WATER	BS	09916246239BS	Bromomethane	57	70	120
WATER	BS	09916246239BS	t-1,3-Dichloropropene	122	70	120
WATER	BS	09916246240BS	2-Chloroethyl Vinyl Ether	53	70	120
WATER	BS	09916246240BS	Bromomethane	66	70	120
WATER	BS	09916246240BS	t-1,3-Dichloropropene	121	70	120

5. Surrogates

All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration

Initial Calibration was not examined by AutoDV.

Continuing Calibration

Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

 $Form\ I\ Review:\ These\ Native IDs\ had\ dilutions\ or\ re-extractions\ that\ were\ flagged\ Exclude:$

ND132GW03S002, ND132GW05S002.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

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Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

ND132GW03S002, ND132GW05S002. Samples were re-analyzed on a diluted basis due to

concentration of target analytes.

COC Review

Sample collection time per sample label for C5GW05S002. Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	C5GW04S0	002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	. 3/
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	27	J	= J	6	50	UG/L	InvalidLabFlag (J)
Benzene	0.14	U	U	0.14	10	UG/L	-
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	1.1	J	=J	0.48	5	UG/L	InvalidLabFlag (J)

Field ID	C5GW04S0	02					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	validation (cason (r lag
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.23	U	U	0.23	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.40	U	U	0.40	10	UG/L	
Hexachloro-1,3-Butadiene	0.14	U	U	0.14	25	UG/L	
Isopropanol	70	J	=J	37	100	UG/L	InvalidLabFlag (J)
							ilivalidLabriag (J)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	MS>UCL (none)
	1.5	U	U	1.5	10	UG/L	SD>UCL (none)
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	C5GW05D0	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
	0.64	U	U	0.64	5	UG/L	
1.2.3-Trichloropropage							
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	

Field ID C5GW05D002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U 1.2 U 1.2 25 UG/L 1,2-Dibromo-3-Chloropropane 1.2-Dibromoethane 0.36 U U 0.36 10 UG/L U 1,2-Dichlorobenzene 0.46 U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U U 1,3-Dichlorobenzene 0.4 0.4 10 UG/L 0.3 U U 0.3 10 UG/L 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L U U 0.36 5 2,2-Dichloropropane 0.36 UG/L 2-Butanone 2.2 50 UG/L InvalidLabFlag (J) 2.6 =JU U 25 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 UG/L 2-Chloroethyl Vinyl Ether 16 R U 25 UG/L LCS<LCL (UJ) 16 U 16 R 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L U U 50 2-Hexanone 2.1 2.1 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L U 4-Methyl-2-Pentanone 4.4 U 4.4 25 UG/L 22 J 50 InvalidLabFlag (J) Acetone =J6 UG/L Benzene 0.34 J =J0.14 10 UG/L InvalidLabFlag (J) Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L U Bromodichloromethane 0.21 U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L Bromomethane 3.9 UJ U 3.9 25 UG/L LCS<LCL (UJ) c-1,2-Dichloroethene 120 0.48 5 UG/L U 10 c-1,3-Dichloropropene 0.25 U 0.25 UG/L Carbon Tetrachloride U U 0.23 0.23 0.5 UG/L Chlorobenzene 0.17 U U 0.1710 UG/L Chloroethane 2.3 U U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L 0.32 U 0.32 Hexachloro-1,3-Butadiene U 25 UG/L Isopropanol 52 J =J37 100 UG/L InvalidLabFlag (J) U Isopropylbenzene 0.58 U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L 0.17 U U 0.17 10 UG/L Styrene

Field ID	C5GW05D0	02					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
t-1,2-Dichloroethene	3.5	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	,
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	3.4	J	= J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	1.7	J	= J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.1			0.3	0.5	UG/L	
Field ID	C5GW05S0	02					
	00011000	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.40	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.42	U	U	0.42	10	UG/L	
1,3-Dichlorobenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichloropropane	0.4	U	U	0.4	10	UG/L	
1,4-Dichlorobenzene	0.3	U	U	0.3	10	UG/L	
	0.43	U	U	0.43		UG/L UG/L	
2,2-Dichloropropane					5		Installation Flora (I)
2-Butanone	2.8	J	=J	2.2	50	UG/L	InvalidLabFlag (J)
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2 (1)	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	23	J	=J	6	50	UG/L	InvalidLabFlag (J)
Benzene	0.33	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>

Field ID	C5GW05S0	02					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
c-1,2-Dichloroethene	110			0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	69	J	=J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	in variables ing (t)
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.23	U	U	0.23	10	UG/L	
o-Xylene	0.17	U	U	0.17	10	UG/L UG/L	
· · · · · · · · · · · · · · · · · · ·	0.23	U	U	0.23	10	UG/L UG/L	
p/m-Xylene							
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	3.2	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	3	J	= J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	1.6	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.1			0.3	0.5	UG/L	
Field ID	C5GW06S0	02					
	-	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.43	U	U	0.43	10	UG/L	
1,1-Dichloroethane	0.38	U	U	0.38	10	UG/L UG/L	
1,1-Dichloroethene	0.28	U	U	0.28	25	UG/L UG/L	
1,1-Dichloropropene	0.45	U	U	0.45	10	UG/L UG/L	
1,1-Diciliotopropelle		U	U	0.46	25	UG/L UG/L	
1 2 3 Trichlorobonzono							
1,2,3-Trichlorobenzene	0.51						
1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.64 0.5	U U	U U	0.64 0.5	5 25	UG/L UG/L	

Field ID C5GW06S002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U UG/L 1,2-Dibromo-3-Chloropropane 1.2 U 1.2 25 1.2-Dibromoethane 0.36 U U 0.36 10 UG/L U 1,2-Dichlorobenzene 0.46 U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U U 1,3-Dichlorobenzene 0.4 0.4 10 UG/L 0.3 U U 0.3 10 UG/L 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 0.36 U U 0.36 5 2,2-Dichloropropane UG/L 2-Butanone 2.2 U U 2.2 50 UG/L U U 25 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 UG/L 2-Chloroethyl Vinyl Ether 16 R U 25 UG/L LCS<LCL (UJ) 16 U 16 R 16 25 UG/L 2Cleve (R) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L U U 50 2-Hexanone 2.1 2.1 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L U 4-Methyl-2-Pentanone 4.4 U 4.4 25 UG/L 13 J 50 UG/L InvalidLabFlag (J) Acetone =J6 Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L U Bromodichloromethane 0.21 U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L Bromomethane 3.9 UJ U 3.9 25 UG/L LCS<LCL (UJ) c-1,2-Dichloroethene 120 0.48 5 UG/L U 0.25 10 c-1,3-Dichloropropene 0.25 U UG/L Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L Chlorobenzene 0.17 U U 0.17 10 UG/L Chloroethane 2.3 U U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U 0.32 U 25 UG/L U Isopropanol 37 U 37 100 UG/L Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L

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Validated Form I

Field ID	C5GW06S0	02					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
t-1,2-Dichloroethene	3.9	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.29	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	1.1	J	=J	0.37	5	UG/L	InvalidLabFlag (J)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.2			0.3	0.5	UG/L	
Field ID	ND132GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	1	J	= J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2 Cinorocuiyi Vinyi Zuici	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	Les Les (es)
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	7	J	=J	6	50	UG/L UG/L	InvalidLabFlag (J)
Benzene	0.14	J U	_J U	0.14	10	UG/L UG/L	invalidizati (3)
Bromobenzene	0.14	U	U	0.14	25	UG/L UG/L	
Bromochloromethane	0.3	U	U	0.3	25 25	UG/L UG/L	
Bromociloromethane Bromodichloromethane	0.48	U		0.48	10	UG/L UG/L	
Bromodicnioromethane Bromoform	0.21	U	U U	0.21	25	UG/L UG/L	

Field ID	ND132GW03	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
c-1,2-Dichloroethene	280		=D	2.4	25	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	33			1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	13			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	2.6	J	= J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	120			0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	1.3	C	· ·	0.3	0.5	UG/L	
·							
Field ID	ND132GW04						
Analyta	Result	Final Flag	Lab Flag				
Analyte	Result	ı iag	i iag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	

Field ID ND132GW04S002 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U UG/L 1,2-Dibromo-3-Chloropropane 1.2 U 1.2 25 1.2-Dibromoethane 0.36 U U 0.36 10 UG/L U 1,2-Dichlorobenzene 0.46 U 0.46 10 UG/L 1,2-Dichloroethane 0.24 U U 0.24 5 UG/L 1,2-Dichloropropane 0.42 U U 0.42 10 UG/L 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U U 1,3-Dichlorobenzene 0.4 0.4 10 UG/L 0.3 U U 0.3 10 UG/L 1,3-Dichloropropane 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 0.36 U U 0.36 5 2,2-Dichloropropane UG/L 2-Butanone 2.2 U U 2.2 50 UG/L U U 25 2-Chloro-1,1,1-trifluoroethane 2.1 2.1 UG/L 2-Chloroethyl Vinyl Ether 16 R U 25 UG/L 2Cleve (R) 16 U 16 R 16 25 UG/L LCS<LCL (UJ) 2-Chlorotoluene 0.24 U U 0.24 25 UG/L U U 50 2-Hexanone 2.1 2.1 UG/L 4-Chlorotoluene 0.13 U U 0.13 25 UG/L U 4-Methyl-2-Pentanone 4.4 U 4.4 25 UG/L 6.7 J 50 InvalidLabFlag (J) Acetone =J6 UG/L Benzene 0.14 U U 0.14 10 UG/L Bromobenzene 0.3 U U 0.3 25 UG/L Bromochloromethane 0.48 U U 0.48 25 UG/L U Bromodichloromethane 0.21 U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L Bromomethane 3.9 UJ U 3.9 25 UG/L LCS<LCL (UJ) c-1,2-Dichloroethene 82 0.48 5 UG/L 0.25 U 0.25 10 c-1,3-Dichloropropene U UG/L Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L Chlorobenzene 0.17 U U 0.17 10 UG/L Chloroethane 2.3 U U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L Chlorotrifluoroethylene 6.4 J =J1.8 25 UG/L InvalidLabFlag (J) Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L 0.32 U 0.32 Hexachloro-1,3-Butadiene U 25 UG/L U Isopropanol 37 U 37 100 UG/L Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene 0.23 U U 0.23 25 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L 0.17 U U 0.17 10 UG/L Styrene

Field ID	ND132GW048	S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
t-1,2-Dichloroethene	4.1	J	=J	0.37	10	UG/L	InvalidLabFlag (J)
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	(,
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	2.9	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	26	· ·	· ·	0.37	5	UG/L	invariable ing (e)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	2.1	C	C	0.3	0.5	UG/L	
Field ID	ND132GW05	S002					
	11,51026 1100	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.85	J	= J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1.2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1.3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-emolocityi viiiyi Eulei	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	Les Lee (03)
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Chlorotoluene 4-Methyl-2-Pentanone	4.4	U	U	4.4	25 25	UG/L UG/L	
·	4.4 19		=J		50 50	UG/L UG/L	InvalidLabFlag (J)
Acetone Benzene		J 1	=J =J	6		UG/L UG/L	0 ()
	0.32	J		0.14	10		InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane Bromodichloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	

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Field ID	ND132GW05	S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
c-1,2-Dichloroethene	390		=D	2.4	25	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	26			1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	150			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	15			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	Ecos CCE (none)
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	4.9	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	15	·	v	0.37	5	UG/L	invariazaer iag (v)
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	13	O	O	0.3	0.5	UG/L	
Vinyi Cilionae				0.3	0.5	OG/L	
Field ID	ND137AGW01	IS002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
	0.64	U	U	0.64	5	UG/L	
1.2.3-Trichioropropane		_	_	0.01	_		
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	

Field ID	ND137AGW0	1S002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
3 3	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	(_,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.31	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	invalidado lag (3)
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.43	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	LCS\LCL (CJ)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.23	U	U	0.23	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform							
	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.2	J	=J	0.14	10	UG/L	InvalidLabFlag (J)
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	110			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.31	J	=J	0.23	10	UG/L	InvalidLabFlag (J)
p/m-Xylene	0.69	J	=J	0.3	10	UG/L	InvalidLabFlag (J)
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	

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Validated Form I

Field ID	ND137AGW01	1S002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	1.7	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

 SDG
 16071587
 Method
 SW8260B-SIM

 Reviewer:
 mfesler
 Date:
 8/11/2016
 Matrix:
 WATER

 Reviewed:

 8/26/2016

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
C5GW04S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05D002	FD	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
C5GW06S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
CAQW2456Q001	TB	1		22071601 / CAQW2456Q001 / 160715
ND132GW03S002	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW04S002	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND132GW05S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
ND137AGW01S002	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715

1. Case Narrative Items of Interest

The following items were noted: FD>RPD

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates These samples were out of control: 1,4-Dioxane (C5GW05S002, %RPD = 71.6 vs 30).

Matrix Sample ID	Analyte	Result	Field Duplicate Qualifier*	Criteria
WATER <u>1,</u>	4-Dioxane			
C5GW05D002	55	UG/L	J	FD>RPD
C5GW05S002	26	UG/L	J	FD>RPD

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: These samples were out of control: 1,4-Dioxane (C5GW05S002, %RPD = 71.6 vs

30).

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of No samples were excluded for dilutions or re-extractions.

Interest

COC Review Sample collection time per sample label for C5GW05S002

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	C5GW04S00						
	5 1	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	22			0.35	1	UG/L	
Field ID	C5GW05D00	02					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	55	J		0.35	1	UG/L	FD>RPD (J)
Field ID	C5GW05S00)2					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	26	J		0.35	1	UG/L	FD>RPD (J)
Field ID	C5GW06S00)2					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	15			0.35	1	UG/L	
Field ID	ND132GW03S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	5.6			0.35	1	UG/L	
Field ID	ND132GW04S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,4-Dioxane	3.9			0.35	1	UG/L	
Field ID	ND132GW05S	002					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1.4-Dioxane	33			0.35	1	UG/L	

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Field ID	ND137AGW01	IS002					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryFD>RPDField duplicate exceeds RPD criteriaFieldDuplicate

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071588 Method SW8260B

Reviewer: bjones7 Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type D	vilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD41BGW01S008	N	10 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
RD41BGW01S008	Ν	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715

Associated Field Blanks (other SDGs)

QAQC NativeID Type Dilution ABLotValue		EBLotValue	TBLotValue	
WATER				
CAQW2456Q001	TB	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 1607158

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control SampleThese LCS analytes were out of control: Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike

dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	Analyte	Recovery	LowerLimit	UpperLimit
WATER	BS	09916246239BS	2-Chloroethyl Vinyl Ether	67	70	120
WATER	BS	09916246239BS	Bromomethane	57	70	120
WATER	BS	09916246239BS	t-1,3-Dichloropropene	122	70	120
WATER	BS	09916246240BS	2-Chloroethyl Vinyl Ether	53	70	120
WATER	BS	09916246240BS	Bromomethane	66	70	120
WATER	BS	09916246240BS	t-1,3-Dichloropropene	121	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: These NativeIDs had dilutions or re-extractions that were flagged Exclude:

RD41BGW01S008.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: Bromomethane (BS), t-1,3-

Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items of Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude:

RD41BGW01S008. Sample was re-analyzed on a diluted basis due to concentration of

target analytes

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD41BGW01	S008					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	3.8	J	=J	0.43	25	UG/L	InvalidLabFlag (J)
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.18	J	= J	0.14	10	UG/L	InvalidLabFlag (J)
Bromobenzene	0.3	U	U	0.3	25	UG/L	2 ()
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	1300		=D	4.8	50	UG/L	InvalidLabFlag (=)
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	

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Field ID	RD41BGW01	S008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chlorobenzene	0.17	U	U	0.17	10	UG/L	, ,
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	37	U	U	37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	58			0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	LCS>UCL (none)
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.33	J	=J	0.24	10	UG/L	InvalidLabFlag (J)
Trichloroethene	8.1			0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	23			0.3	0.5	UG/L	

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Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous
RE	Re-extraction and/or re-analysis	Re-analysis

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

SDG 16071588 **Method SW8260B-SIM**

Reviewer: bjones7 Date: 8/11/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD41BGW01S008	N	5 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715
RD41BGW01S008	N	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 160715

Associated Field Blanks (other SDGs)

NativeID	QAQC Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2456Q001	TB	1 Missing Association DP	Missing Association DP	22071601 / CAQW2456Q001 / 1607158

1. Case Narrative Items of Interest

No items of concern.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

16071588 SW8260B-SIM

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4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

Interest

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Package was complete for level V validation. **Data Package Completeness**

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

RD41BGW01						
Result	Final Flag	Lab Flag	MDI	ΡI	Unite	ValidationReason (Flag)
				- INL		validationiteason (riag)
			Final Lab	Final Lab Result Flag Flag MDL	Final Lab	Final Lab Result Flag Flag MDL RL Units

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All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

SDG 16071633	i	Method	SW8315A			
Reviewer: mfesl	er		Date:	8/31/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association		nber / FieldID /	SDG			<u> </u>
NativeID	QAQC Type Dilution	ABLotValue		EBLotValue	7	TBLotValue
WATER HAR21GW01S006 HAR23GW01S006		sing Association D sing Association D		ssing Association DP ssing Association DP		071601 / CAQW2446Q001 / 1607 [.] 071601 / CAQW2446Q001 / 1607 [.]
1. Case Narrative Items of Interes	There wer	e no items of c	oncern			
2. Blank Summar	· y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Bla	nk detects were	found.			
3. Spikes and Dup Field Duplica	licates tes No FD Asso	ociated.				
Laboratory Dupl		n this SDG s SDG. No SD	's for this SDG. MS	RPD: None for this S	DG.	
4. Laboratory Con	ntrol Sample	All acceptan	ce criteria were met.			

16071633 SW8315A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Holding Time: These NativeIDs exceeded holding time: HAR21GW01S006, HAR23GW01S006.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR21GW01	S006 Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	61			20	50	UG/L	
51.115							
Field ID	HAR23GW01	S006					
Field ID	HAR23GW01	Final	Lab				
Analyte	HAR23GW01 Result		Lab Flag	MDL	RL	Units	ValidationReason (Flag)
		Final		MDL 0.25	RL 0.8	Units UG/L	ValidationReason (Flag)
Analyte	Result	Final Flag	Flag				ValidationReason (Flag)
Analyte 1,1-DIMETHYLHYDRAZINE	Result	Final Flag U	Flag U	0.25	0.8	UG/L	ValidationReason (Flag)

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Data Quality Evaluation

SDG 16071634	Method	SW8315A			
Reviewer: mfesler		Date:	8/31/2016	Matrix:	WATER

Reviewed: ___ 8/31/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC				
NativeID 7	Type Dilution ABLotValue		EBLotValue	TBLotValue	
WATER					
HAR08GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
HAR08GW01S007SD	SD	1			
HAR08GW01S007MS	MS	1			
HAR11GW01S007	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	
RD49CGW01S006	N	1 Missing Association DP	Missing Association DP	19071601 / CAQW2447Q001 / 160712	

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

 $Holding\ Time:\ These\ Native IDs\ exceeded\ holding\ time:\ HAR08GW01S007,\ HAR11GW01S007,$

RD49CGW01S006.

VDMS4.32

No discrepancies

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

COC Review

No samples were excluded for dilutions or re-extractions.

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR08GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.8	U	U	0.25	0.8	UG/L	(13)
FORMALDEHYDE	50	U	U	20	50	UG/L	
Field ID	HAR11GW01	S007					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.8	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	23	J	J	20	50	UG/L	
Field ID	RD49CGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.8	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	49	J	J	20	50	UG/L	

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Data Quality Evaluation

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2457Q001	TB	1		25071601 / CAQW2457Q001 / 160716
RD41AGW01S006	N	1 Missing Association DP	Missing Association DP	25071601 / CAQW2457Q001 / 160716
RD41AGW01S006MS	S MS	1		
RD41AGW01S006SE) SD	1		

1. Case Narrative Items of Interest

The following items were noted; 2Cleve, LCS<LCL; MS<LCL; SD<LCL.

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - RD41AGW01S006MS),

Pentachloroethane (MS - RD41AGW01S006MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - RD41AGW01S006SD), Pentachloroethane (SD -

RD41AGW01S006SD). For high recoveries and sample results reported as ND, no flagging

was applied. All RPD acceptance criteria were met.

Matrix	rix Sample ID LR Type		Analyte	Result	MS/MSD Qualifier*	Criteria
WATER	ER <u>2-Chlor</u>		loroethyl Vinyl	<u>Ether</u>		
	RD41AGW01S006		16 UG/L		R	MS <lcl< td=""></lcl<>
	RD41AGW01	S006	1	6 UG/L	R	SD <lcl< td=""></lcl<>

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WATER <u>Pentachloroethane</u>

RD41AGW01S006 1.5 UG/L none MS>UCL RD41AGW01S006 1.5 UG/L none SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results reported as ND, no flagging was applied. No spike dupes in this SDG.

Matrix	QAQC Type Field ID		Analyte	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246240BS	2-Chloroethyl Vinyl Ether	53	70	120
WATER	BS	09916246240BS	Bromomethane	66	70	120
WATER	BS	09916246240BS	t-1,3-Dichloropropene	121	70	120
WATER	BS	09916246241BS	2-Chloroethyl Vinyl Ether	47	70	120
WATER	BS	09916246241BS	Bromomethane	66	70	120
WATER	BS	09916246241BS	t-1,3-Dichloropropene	123	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

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Forms Review/ Items of Interest

No samples were excluded for dilutions or re-extractions.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD41AGW01	S006					
	Final		Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	

mfesler

Vinyl Chloride

0.3

U

U

0.3

0.5

UG/L

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Field ID RD41AGW01S006 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) 0.25 U U 0.25 10 UG/L c-1,3-Dichloropropene Carbon Tetrachloride 0.23 U U 0.23 0.5 UG/L U 0.17 U 0.17 10 UG/L Chlorobenzene Chloroethane 2.3 U U 2.3 25 UG/L U U Chloroform 0.46 0.46 10 UG/L Chloromethane 1.8 U U 1.8 25 UG/L 1.8 U U 25 UG/L Chlorotrifluoroethylene 1.8 Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L 0.32 U U 0.32 25 Hexachloro-1,3-Butadiene UG/L Isopropanol 37 U U 37 100 UG/L U U 0.58 0.58 10 UG/L Isopropylbenzene Methylene Chloride 0.64 U U 0.64 25 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L U U 0.23 UG/L n-Butylbenzene 0.23 25 0.17 U U 0.17 10 n-Propylbenzene UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L MS>UCL (none) 1.5 U U 1.5 10 UG/L SD>UCL (none) U U 10 p-Isopropyltoluene 0.16 0.16 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L 0.17 U U 0.17 10 Styrene UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 LCS>UCL (none) UG/L tert-Butylbenzene 0.28 U U 0.28 25 UG/L 5 0.39 U U 0.39 Tetrachloroethene UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 1.2 0.37 UG/L InvalidLabFlag (J) J =J5 Trichlorofluoromethane 1.7 U U 1.7 25 UG/L

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH614 3Q2016 SA/PCP GWS

Data Quality Evaluation

						
SDG 16071663	3	Method	SW8260B-SIM			
Reviewer: bjone	es7		Date:	8/11/2016	Matrix:	WATER
Reviewed:	9/7/2016	-				
Field Samples Field blank association		nber / FieldID /	SDG			
NativeID	QAQC Type Dilution	ABLotValue	E	BLotValue		TBLotValue
WATER CAQW2457Q001 RD41AGW01S006	TB 1 N 1 Mis	sing Association D	P Missi	ng Association DP		5071601 / CAQW2457Q001 / 160716 5071601 / CAQW2457Q001 / 160716
1. Case Narrative Items of Interes	No items of	of concern.				
2. Blank Summar	r y					
Field Blanks	No Field Blank	detects were fo	und.			
Method Blanks	No Method Bla	nk detects were	found.			
3. Spikes and Dup	olicates					
Field Duplica	ites No FD Asso	ociated.				
Laboratory Dupl	icates None ir	n this SDG				
Matrix Spike	No MS's for this	s SDG. No SD	's for this SDG. MS RI	PD: None for this SI	DG.	
4. Laboratory Con	ntrol Sample	All acceptane	ce criteria were met. N	o spike dupes in thi	s SDG.	
5. Surrogates	All accep	otance criteria w	vere met.			

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD41AGW01S006						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1.4-Diovane	0.35	II	II	0.35	1	LIG/I	

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No surrogates in this SDG.

Data Quality Evaluation

5. Surrogates

SDG 16071756		Method	E314					
Reviewer: bjones	7			Date:	8/12/2016	Matrix:	WATER	
Reviewed:	9/2/2016	-						
Field Samples								
Field blank association I	ot values: LotNun	nber / FieldID /	SDG					
	AQC Type Dilution	ABLotValue		E	BLotValue		TBLotValue	
WATER HAR19GW01S016 HAR19GW01S016MS HAR19GW01S016SD	N 1 Mis MS 1 SD 1	sing Association D)P	Missir	ng Association DP		26071601 / CAQW2458QC	01 / 16071
1. Case Narrative Items of Interest	No items o	of concern.						
2. Blank Summary	7							
Field Blanks	No Field Blanks	were found.						
Method Blanks	No Method Blan	nk detects were	e found.					
3. Spikes and Dupl	icates							
Field Duplicat	es No FD Asso	ociated.						
Laboratory Duplic	cates None in	this SDG						
Matrix Spike	All MS acceptar acceptance crite		re met. Al	l SD acceptan	ce criteria were me	t. All RPD		
4. Laboratory Con	trol Sample	All acceptan	ice criteria	were met. No	o spike dupes in thi	s SDG.		

16071756 E314

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01S016						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	

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Data Quality Evaluation

5. Surrogates

All acceptance criteria were met.

SDG 16071756		Method	SW8270C-SIM			
Reviewer: bjone	s7		Date:	8/12/2016	Matrix:	WATER
Reviewed:	9/2/2016	_				
Field Samples						
Field blank association		mber / FieldID /	SDG			
NativeID	QAQC Type Dilution	ABLotValue	E	BLotValue		TBLotValue
WATER						
HAR19GW01S016 HAR19GW01S016MS HAR19GW01S016SD		ssing Association [DP Missir	ng Association DP	2	26071601 / CAQW2458Q001 / 16071
 Case Narrative Items of Interes Blank Summar 	τ	of concern.				
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla		e found.			
3. Spikes and Dup	licates					
Field Duplica	tes No FD Ass	ociated.				
Laboratory Dupli	cates None in	n this SDG				
Matrix Spike	All MS accepta acceptance crite		re met. All SD acceptan	ce criteria were me	t. All RPD	
4. Laboratory Cor	ntrol Sample	All acceptar	nce criteria were met. No	o spike dupes in thi	s SDG.	

16071756 SW8270C-SIM

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation.

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	HAR19GW01S016								
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)			
Bis(2-Ethylhexyl) Phthalate	0.091	J	=J	0.048	9.7	UG/L	InvalidLabFlag (J)			
Butyl Benzyl Phthalate	0.11	J	=J	0.052	9.7	UG/L	InvalidLabFlag (J)			
Diethyl Phthalate	0.052	U	U	0.052	9.7	UG/L				
Dimethyl Phthalate	0.045	U	U	0.045	9.7	UG/L				
Di-n-Butyl Phthalate	0.12	J	=J	0.078	9.7	UG/L	InvalidLabFlag (J)			
Di-n-Octyl Phthalate	0.047	U	U	0.047	9.7	UG/L				

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

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Data Quality Evaluation

Method SW8330A **SDG** 16071756 Reviewer: Date: 8/12/2016 Matrix: WATER bjones7 9/2/2016 Reviewed: Field Samples Field blank association lot values: LotNumber / FieldID / SDG **QAQC NativeID Type Dilution** ABLotValue **EBLotValue TBLotValue WATER** HAR19GW01S016 Ν 1 Missing Association DP Missing Association DP 26071601 / CAQW2458Q001 / 160717 HAR19GW01S016MS MS HAR19GW01S016SD SD 1. Case Narrative No items of concern. **Items of Interest** 2. Blank Summary No Field Blanks were found. Field Blanks No Method Blank detects were found. **Method Blanks** 3. Spikes and Duplicates Field Duplicates No FD Associated. **Laboratory Duplicates** None in this SDG **Matrix Spike** All MS acceptance criteria were met. These SD's were out of control: 1,3,5-Trinitrobenzene (SD - HAR19GW01S016SD), 1,3-Dinitrobenzene (SD - HAR19GW01S016SD), 2,4,6-Trinitrotoluene (SD - HAR19GW01S016SD), 2,4-Dinitrotoluene (SD -HAR19GW01S016SD), 2,6-Dinitrotoluene (SD - HAR19GW01S016SD), 2-Amino-4,6-DNT (SD - HAR19GW01S016SD), 2-Nitrotoluene (SD - HAR19GW01S016SD), 3-Nitrotoluene (SD - HAR19GW01S016SD), 4-Amino-2,6-DNT (SD -HAR19GW01S016SD), 4-Nitrotoluene (SD - HAR19GW01S016SD), Tetryl (SD -HAR19GW01S016SD). Since recoveries were high and sample results were ND, no

Matrix

Sample ID

Analyte

Result

MS/MSD Qualifier*

Criteria

flagging applied. All RPD acceptance criteria were met.

LR Type

16071756 SW8330A

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	HAR19GW01S016		0.049 UG/L	none	SD>UCL
WATER		1,3-Dinitrobenzen	<u>ne</u>		
	HAR19GW01S016		0.055 UG/L	none	SD>UCL
WATER		2,4,6-Trinitrotolue	<u>ene</u>		
	HAR19GW01S016		0.028 UG/L	none	SD>UCL
WATER		2,4-Dinitrotoluene	2		
	HAR19GW01S016		0.042 UG/L	none	SD>UCL
WATER		2,6-Dinitrotoluene	<u>)</u>		
	HAR19GW01S016		0.057 UG/L	none	SD>UCL
WATER		2-Amino-4,6-DNT	• •		
	HAR19GW01S016		0.066 UG/L	none	SD>UCL
WATER		2-Nitrotoluene			
	HAR19GW01S016		0.043 UG/L	none	SD>UCL
WATER		3-Nitrotoluene			
	HAR19GW01S016		0.051 UG/L	none	SD>UCL
WATER		4-Amino-2,6-DNT	• •		
	HAR19GW01S016		0.059 UG/L	none	SD>UCL
WATER		4-Nitrotoluene			
	HAR19GW01S016		0.058 UG/L	none	SD>UCL
WATER		<u>Tetryl</u>			
	HAR19GW01S016		0.073 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2,4,6-Trinitrotoluene (BS). Since recoveries were high and sample results were ND, no flagging applied. No spike dupes in this SDG.

<u>Matrix</u>	QAQC Ty	pe Field ID	<u>Analyte</u>	Recovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	0991631428BS	2,4,6-Trinitrotoluene	134	80	130

- **5. Surrogates** All acceptance criteria were met.
- **6. Tuning and Mass Calibration**

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

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11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2,4,6-Trinitrotoluene (BS). No

spike dupes in this SDG.

VDMS4.32

Data Package Completeness

Package was complete for level V validation.

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies.

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID Analyte	HAR19GW01S016						
	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.049	U	U	0.049	1.1	UG/L	SD>UCL (none)
1,3-Dinitrobenzene	0.055	U	U	0.055	1.1	UG/L	SD>UCL (none)
2,4,6-Trinitrotoluene	0.028	U	U	0.028	1.1	UG/L	SD>UCL (none)
	0.028	U	U	0.028	1.1	UG/L	LCS>UCL (none)
2,4-Dinitrotoluene	0.042	U	U	0.042	1.1	UG/L	SD>UCL (none)
2,6-Dinitrotoluene	0.057	U	U	0.057	1.1	UG/L	SD>UCL (none)
2-Amino-4,6-DNT	0.066	U	U	0.066	1.1	UG/L	SD>UCL (none)
2-Nitrotoluene	0.043	U	U	0.043	1.1	UG/L	SD>UCL (none)
3-Nitrotoluene	0.051	U	U	0.051	1.1	UG/L	SD>UCL (none)
4-Amino-2,6-DNT	0.059	U	U	0.059	1.1	UG/L	SD>UCL (none)
4-Nitrotoluene	0.058	U	U	0.058	1.1	UG/L	SD>UCL (none)
HMX	0.05	U	U	0.05	1.1	UG/L	
Nitrobenzene	0.061	U	U	0.061	1.1	UG/L	
RDX	0.065	U	U	0.065	1.1	UG/L	
Tetryl	0.073	U	U	0.073	1.1	UG/L	SD>UCL (none)

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix

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Data Quality Evaluation

RD49BGW01S005

Method E300.0 **SDG** 16071757 Reviewer: Date: 8/12/2016 Matrix: WATER mfesler 9/2/2016 Reviewed: Field Samples Field blank association lot values: LotNumber / FieldID / SDG **QAQC NativeID Type Dilution ABLotValue EBLotValue TBLotValue WATER** RD49BGW01S005 Ν 5 Missing Association DP Missing Association DP 26071601 / CAQW2458Q001 / 160717 RD49BGW01S005 Ν 1 Missing Association DP Missing Association DP 26071601 / CAQW2458Q001 / 160717 RD49BGW01S005MS MS RD49BGW01S005SD SD 1. Case Narrative There were no items of concern **Items of Interest** 2. Blank Summary **Field Blanks** No Field Blanks were found. No Method Blank detects were found. **Method Blanks** 3. Spikes and Duplicates Field Duplicates No FD Associated. **Laboratory Duplicates** None in this SDG **Matrix Spike** These MS's were out of control: Sulfate (MS - RD49BGW01S005MS). These SD's were out of control: Sulfate (SD - RD49BGW01S005SD). The native sample concentration was greater than 4 times spike level; no flagging applied. All RPD acceptance criteria were met. Matrix Sample ID Analyte Result MS/MSD Qualifier* Criteria WATER **Sulfate** RD49BGW01S005 320 MG/L None MS>UCL

320 MG/L

SD>UCL

None

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4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD49BGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Chloride	38			0.52	1	MG/L	
Fluoride	0.23			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Sulfate	320		=D	1.3	5	MG/L	SD>UCL (None)
	320		=D	1.3	5	MG/L	MS>UCL (None)
	320		=D	1.3	5	MG/L	InvalidLabFlag (=)

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

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Data Quality Evaluation

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC			
NativeID	Гуре Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
HAR19GW01S016	N	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
HAR19GW01S016MS	MS	1		
HAR19GW01S016SD	SD	1		
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
ND135GW01S011	N	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
ND135GW01S011MS	MS	1		
ND135GW01S011SD	SD	1		
RD49BGW01S005	N	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

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4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	H A D 10 C W 0 1	0017					
. 10.0.12	HAR19GW01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
N-Nitrosodimethylamine	2.9	U	U	2.9	9.6	NG/L	
Field ID	ND135GW01	D011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	60			2.9	9.6	NG/L	
Field ID	ND135GW01	S011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	53			2.9	9.6	NG/L	
Field ID	RD49BGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	12			2.9	9.8	NG/L	

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All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

							_
SDG	16071757	,	Method	SW8015B			
Review	ver: mfes	er		Date:	8/12/2016	Matrix:	WATER
Reviewed	d:	9/2/2016					
	d Samples						
Field bl	lank associatior	lot values: Lot	Number / FieldID	/ SDG			
Native		QAQC Type Dilutio	n ABLotValu	e	EBLotValue	,	ΓBLotValue
WATE	ΕR						
CAQW	/2458Q001	TB 1				260	071601 / CAQW2458Q001 / 1607
RD49E	3GW01S005	N 20	Missing Association	DP	Missing Association DP		071601 / CAQW2458Q001 / 1607
RD49E	3GW01S005	N 1	Missing Association	DP	Missing Association DP	260	071601 / CAQW2458Q001 / 1607
Iten	e Narrative ns of Intere	st There	were no items of	concern			
Field	Blanks	No Field Bl	ank detects were t	found.			
Meth	od Blanks	No Method	Blank detects we	re found.			
_	kes and Dupica		Associated.				
Labo	ratory Dupl	icates _{Nor}	e in this SDG				
Matri	x Spike	No MS's for	this SDG. No S	D's for this SDG. M	IS RPD: None for this S	DG.	
4. Lab	ooratory Co	ntrol Sampl	e All accepta	unce criteria were me	et.		

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD49BGW01	S005					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	50	U	U	8	50	UG/L	
C15-C20	29	J	=J	8	50	UG/L	InvalidLabFlag (J)
C21-C30	9.3	J	=J	8	50	UG/L	InvalidLabFlag (J)
C30-C40 (TPH as Oil)	50	U	U	8	50	UG/L	
C4-C12 (TPH as Gas)	72		=b	48	50	UG/L	InvalidLabFlag (=)
C7	50	U	U	8	50	UG/L	
C8-C11	50	U	U	8	50	UG/L	
C8-C30	38	J	= J	8	50	UG/L	InvalidLabFlag (J)

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

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Data Quality Evaluation

RD49BGW01S005

Method SW8260B **SDG** 16071757 Reviewer: Date: 8/12/2016 Matrix: WATER mfesler 9/2/2016 Reviewed: Field Samples Field blank association lot values: LotNumber / FieldID / SDG **QAQC NativeID** Type Dilution **ABLotValue EBLotValue TBLotValue WATER** CAQW2458Q001 TB 26071601 / CAQW2458Q001 / 160717 RD49BGW01S005 Ν 1 Missing Association DP Missing Association DP 26071601 / CAQW2458Q001 / 160717 RD49BGW01S005MS MS RD49BGW01S005SD SD 1. Case Narrative The following items were noted: 2Cleve; LCS<LCL; MS<LCL; SD<LCL **Items of Interest** 2. Blank Summary **Field Blanks** No Field Blank detects were found. No Method Blank detects were found. **Method Blanks** 3. Spikes and Duplicates Field Duplicates No FD Associated. **Laboratory Duplicates** None in this SDG **Matrix Spike** These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - RD49BGW01S005MS), c-1,2-Dichloroethene (MS - RD49BGW01S005MS), Pentachloroethane (MS -RD49BGW01S005MS). These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD -RD49BGW01S005SD), c-1,2-Dichloroethene (SD - RD49BGW01S005SD), Pentachloroethane (SD - RD49BGW01S005SD). For high recoveries and sample results ND, no flagging applied to those analytes. All RPD acceptance criteria were met. Matrix Sample ID LR Type Analyte Result MS/MSD Qualifier* Criteria WATER 2-Chloroethyl Vinyl Ether

16 UG/L

R

MS<LCL

16071757 SW8260B

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	RD49BGW01S005	16 UG/L	R	SD <lcl< th=""></lcl<>
WATER		c-1,2-Dichloroethene		
	RD49BGW01S005	180 UG/L	J	MS <lcl< td=""></lcl<>
	RD49BGW01S005	180 UG/L	J	SD <lcl< td=""></lcl<>
WATER		<u>Pentachloroethane</u>		
	RD49BGW01S005	1.5 UG/L	none	MS>UCL
	RD49BGW01S005	1.5 UG/L	none	SD>UCL

4. Laboratory Control Sample

These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS), Bromomethane (BS), t-1,3-Dichloropropene (BS). For high recoveries and sample results ND, no flagging applied to those analytes. No spike dupes in this SDG.

Matrix	QAQC Ty	pe Field ID	<u>Analy</u>	te Ro	ecovery	LowerLimit	<u>UpperLimit</u>
WATER	BS	09916246241BS	2-Chlore	pethyl Vinyl Ether	47	70	120
WATER	BS	09916246241BS	Bromon	nethane	66	70	120
WATER	BS	09916246241BS	t-1,3-Di	chloropropene	123	70	120

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

Laboratory Control Sample: These LCS analytes were out of control: 2-Chloroethyl Vinyl Ether (BS),

Bromomethane (BS), t-1,3-Dichloropropene (BS). No spike dupes in this SDG.

VDMS4.32

Data Package Completeness Package was complete for level V validation

16071757 SW8260B

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Forms Review/ Items of Interest

No samples were excluded for dilutions or re-extractions.

COC Review

Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD49BGW01	S005					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	8.6	J	=J	6	50	UG/L	InvalidLabFlag (J)
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	UJ	U	3.9	25	UG/L	LCS <lcl (uj)<="" td=""></lcl>
c-1,2-Dichloroethene	180	J		0.48	5	UG/L	MS <lcl (j)<="" td=""></lcl>

mfesler

Vinyl Chloride

1.2

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Field ID RD49BGW01S005 Final Lab Flag Flag Result Analyte MDL RL Units ValidationReason (Flag) 180 J 5 UG/L SD<LCL (J) 0.48 c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L U Carbon Tetrachloride 0.23 U 0.23 0.5 UG/L Chlorobenzene 0.17 U U 0.17 10 UG/L U Chloroethane 2.3 U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L U U 25 UG/L Chloromethane 1.8 1.8 Chlorotrifluoroethylene 1.8 U U 1.8 25 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L U U 10 Ethylbenzene 0.14 0.14 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L 540 37 100 UG/L Isopropanol Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride 0.64 U U 0.64 25 UG/L U U 0.31 UG/L Methyl-t-Butyl Ether (MTBE) 0.31 25 n-Butylbenzene U U 0.23 25 0.23 UG/L n-Propylbenzene 0.17 U U 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L Pentachloroethane 1.5 U U 1.5 10 UG/L MS>UCL (none) 1.5 U U 10 1.5 UG/L SD>UCL (none) p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 10 30 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L LCS>UCL (none) 0.28 U U 0.28 tert-Butylbenzene 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L Trichloroethene 26 0.37 5 UG/L Trichlorofluoromethane 1.7 U U 1.7 25 UG/L

0.3

0.5

UG/L

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LCS <lcl< td=""><td>LCS recovery less than the lower control limit</td><td>LaboratoryControlSample</td></lcl<>	LCS recovery less than the lower control limit	LaboratoryControlSample
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
MS>UCL	Matrix spike recovery greater than the upper control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
SD>UCL	Matrix spike duplicate recovery criteria greater than the upper control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH582 3Q2016 SA/PCP_AIG GWS

Data Quality Evaluation

SDG 160	71757	Method	SW8260B-SIM			
Reviewer:	mfesler		Date:	8/12/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
CAQW2458Q001	TB	1		26071601 / CAQW2458Q001 / 160717
HAR19GW01S016	Ν	5 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
HAR19GW01S016	Ν	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
HAR19GW01S016MS	MS	5		
HAR19GW01S016SD	SD	5		
ND135GW01D011	FD	5 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
ND135GW01D011	FD	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
ND135GW01S011	N	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
ND135GW01S011MS	MS	1		
ND135GW01S011SD	SD	1		
RD49BGW01S005	N	5 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717
RD49BGW01S005	N	1 Missing Association DP	Missing Association DP	26071601 / CAQW2458Q001 / 160717

1. Case Narrative Items of Interest

The following items were noted: FD>RPD; MS<LCL; SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates These samples were out of control: 1,4-Dioxane (ND135GW01S011, Difference > RL X 2: 8 vs 2).

Matrix Sample ID	Analyte	Result	Field Duplicate Qualifier*	Criteria
WATER	1,4-Dioxane			
ND135GW0)1D011	14 UG/L	J	FD>RPD

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ND135GW01S011 22 UG/L J FD>RPD

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 1,4-Dioxane (MS - ND135GW01S011MS). These SD's

were out of control: 1,4-Dioxane (SD - ND135GW01S011SD). All RPD acceptance criteria

were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>1,4-l</u>	<u>Dioxane</u>			
	ND135GW01	S011		22 UG/L	J	MS <lcl< td=""></lcl<>
	ND135GW01	S011		22 UG/L	J	SD <lcl< td=""></lcl<>

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: These samples were out of control: 1,4-Dioxane (ND135GW01S011, Difference >

RL X 2: 8 vs 2).

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

16071757 SW8260B-SIM

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Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	1.8	U	U	1.8	5	UG/L	
Field ID	ND135GW01	D011					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	14	J		1.8	5	UG/L	FD>RPD (J)
Field ID	ND135GW01	S011					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
1,4-Dioxane	22	J		0.35	1	UG/L	SD <lcl (j)<="" td=""></lcl>
	22	J		0.35	1	UG/L	MS <lcl (j)<="" td=""></lcl>
	22	J		0.35	1	UG/L	FD>RPD (J)
Field ID	RD49BGW01	S005					
		Final	Lab				
			Eloa				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
FD>RPD	Field duplicate exceeds RPD criteria	FieldDuplicate
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

NASA SSFL CH614 3Q2016 SA/PCP GWS

All acceptance criteria were met.

Data Quality Evaluation

5. Surrogates

						<u> </u>
SDG 16071871		Method	SW8315A			
Reviewer: mfest	er		Date:	8/31/2016	Matrix:	WATER
Reviewed:	9/2/2016	-				
Field Samples		nber / FieldID /	SDG			
	QAQC			EDI etVolve		TDI otVolvo
NativeID	Type Dilution	ABLotValue		EBLotValue		TBLotValue
WATER HAR19GW01S016 HAR19GW01S016SD	MS 1	sing Association C)P	Missing Association DP	26	6071601 / CAQW2458Q001 / 16071
1. Case Narrative Items of Interes	There wer	e no items of c	oncern			
2. Blank Summai	ŗ y					
Field Blanks	No Field Blanks	s were found.				
Method Blanks	No Method Bla	nk detects were	e found.			
3. Spikes and Dup	licates					
Field Duplica	tes No FD Asso	ociated.				
Laboratory Dupl	icates None in	n this SDG				
Matrix Spike	All MS acceptar		re met. All SD acc	eptance criteria were me	t. All RPD	
4. Laboratory Co	ntrol Sample	All acceptan	ce criteria were mo	et.		

16071871 SW8315A

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration No DV

Continuing Calibration No DV

9. Holding Time

All acceptance criteria were met.

10. Confirmation

N/A

11. Summary

General Comments

All acceptance criteria were met.

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review

No discrepancies

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR19GW01	S016					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1-DIMETHYLHYDRAZINE	0.25	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	20	U	U	20	50	UG/L	

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3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16071953		Method	4500-NH3F			
Reviewer: mfesle	er		Date:	9/2/2016	Matrix: W	ATER
Reviewed:	9/2/2016	_				
Field Samples Field blank association	lot values: LotNur	mber / FieldID /	SDG			_
	QAQC Type Dilution	ABLotValue		EBLotValue	ТВІ	LotValue
WATER HAR11GW01S008	N 1 Mis	ssing Association D)P	Missing Association DP	280716	01 / CAQW2462Q001 / 16071
1. Case Narrative Items of Interest	There were	re no items of c	oncern			
2. Blank Summar	y					
Field Blanks	No Field Blank	s were found.				
Method Blanks	No Method Bla	ank detects were	e found.			
3. Spikes and Dupl Field Duplicat		ociated.				
Laboratory Duplic	cates None in	n this SDG				
Matrix Spike	No MS's for thi	s SDG. No SD	s for this SDG. M	IS RPD: None for this S	DG.	
4. Laboratory Con	trol Sample	All acceptan	ce criteria were me	et.		
5. Surrogates	No surro	gates in this SI	OG.			
6. Tuning and Mas Calibration	N/A					

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	HAR11GW01	S008					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Ammonia (as N)	0.38			0.0086	0.05	MG/L	

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Validated Form I

3Q2016 SA/PCP & AIG GWS

Data Quality Evaluation

SDG 16080986 Method 4500-NH3F

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006MS	S MS	1		
RD68BGW01S006SD) SD	1		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates No surrogates in this SDG.

16080986 4500-NH3F

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Ammonia (as N)	0.088			0.0086	0.05	MG/L	
Field ID	RD68BGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flaç
Ammonia (as N)	0.09			0.0086	0.05	MG/L	

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Validated Form I

Data Quality Evaluation

SDG 16080986 Method E300.0

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dilution ABLotValue		EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	Ν	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003MS	S MS	1		
SP29BGW01S003SD	SD	1		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks Were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Fluoride	0.7			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Field ID	RD68BGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Fluoride	0.97			0.027	0.1	MG/L	
Nitrate (as N)	0.053	U	U	0.053	0.1	MG/L	
Field ID	SP29BGW01	D003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Fluoride	4.8			0.027	0.1	MG/L	
Field ID	SP29BGW01	S003					
	512,23,1101	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Fluoride	4.8			0.027	0.1	MG/L	

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Validated Form I

Data Quality Evaluation

SDG 16080986 Method E314

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: 9/2/2016

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006MS	MS MS	1		
RD68BGW01S006SD	SD	1		

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks Were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates No surrogates in this SDG.

16080986 E314

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Surrogates: No surrogates in this SDG.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	
Field ID	RD68BGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Perchlorate	0.41	U	U	0.41	2	UG/L	

Data Quality Evaluation

SDG 160	80986	Method	E1625C			
Reviewer:	mfesler		Date:	9/2/2016	Matrix:	WATER
Reviewed:	9/2/2016					

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.
- **6. Tuning and Mass**Calibration

 Tuning and Mass Calibration were not examined by AutoDV.

16080986 E1625C

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7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

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Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
N-Nitrosodimethylamine	3	U	U	3	10	NG/L	
Field ID	RD68BGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flaç
N-Nitrosodimethylamine	2.9	U	U	2.9	9.8	NG/L	

Data Quality Evaluation

SDG 16080986 Method SW8015B

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016_____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type D	Oilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	20 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	20 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

16080986 SW8015B

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Field ID

Validated Form I

Final Data Flags*

C8-C30

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

RD68AGW01S006

		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C7	8	U	U	8	50	UG/L	
C8-C11	8	U	U	8	50	UG/L	
C8-C30	8	U	U	8	50	UG/L	
Field ID	RD68BGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag)
C12-C14	8	U	U	8	50	UG/L	
C15-C20	8	U	U	8	50	UG/L	
C21-C30	8	U	U	8	50	UG/L	
	U	C	C	U	50	0.0,2	
C30-C40 (TPH as Oil)	8	U	U	8	50	UG/L	
C30-C40 (TPH as Oil) C7							
· · · · · · · · · · · · · · · · · · ·	8	U	U	8	50	UG/L	

UG/L

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Validated Form I

Data Quality Evaluation

SDG 16080986 Method SW8260B

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

Q	AQC				
NativeID	Type Di	lution ABLotValue	EBLotValue	TBLotValue	
WATER					
CAQW2471Q001	TB	1		12081601 / CAQW2471Q001 / 160809	
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
RD68AGW01S006MS	MS	1			
RD68AGW01S006SD	SD	1			
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	

1. Case Narrative Items of Interest

The following items were noted: 2Cleve; MS<LCL; SD<LCL

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike These MS's were out of control: 2-Chloroethyl Vinyl Ether (MS - RD68AGW01S006MS).

These SD's were out of control: 2-Chloroethyl Vinyl Ether (SD - RD68AGW01S006SD).

All RPD acceptance criteria were met.

Matrix	Sample ID	LR Type	Analyte	Result	MS/MSD Qualifier*	Criteria
WATER		<u>2-Cl</u>	nloroethyl Vinyl	<u>Ether</u>		
	RD68AGW01	S006	1	6 UG/L	R	MS <lcl< td=""></lcl<>
	RD68AGW01	S006	1	6 UG/L	R	SD <lcl< td=""></lcl<>

4. Laboratory Control Sample All acceptance criteria were met. No spike dupes in this SDG.

5. Surrogates All acceptance criteria were met.

6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review Acid preserved vials used for 2-chloroethylvinyl ether; results were rejected from project use

Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
	16	R	U	16	25	UG/L	MS <lcl (r)<="" td=""></lcl>
	16	R	U	16	25	UG/L	SD <lcl (r)<="" td=""></lcl>
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	

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Validated Form I

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag				
				MDL	RL	Units	ValidationReason (Flag
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	230			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	RD68BGW01	S006					
	TLD GODG TT GI	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,3-111010010010010			U	0.5	25	UG/L	
	0.5	U	U	())			
1,2,4-Trichlorobenzene	0.5 0.36	U U					
	0.5 0.36 1.2	U U	U U	0.36 1.2	10 25	UG/L UG/L	

Validated Form I

Field ID	RD68BGW01						
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	(****
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	,
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	13	J	=J	6	50	UG/L	InvalidLabFlag (J)
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Chlorobenzene	0.17	U	U	0.17	10	UG/L	
Chloroethane	2.3	U	U	2.3	25	UG/L	
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.46	U	U	0.46	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.32	U	U	0.32	25	UG/L	
Isopropanol	410			37	100	UG/L	
Isopropylbenzene	0.58	U	U	0.58	10	UG/L	
Methylene Chloride	0.64	U	U	0.64	25	UG/L	
Methyl-t-Butyl Ether (MTBE)	0.31	U	U	0.31	25	UG/L	
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	

Chlorobenzene

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Validated Form I

Field ID	RD68BGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	SP29BGW011	D003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
•		T.T.	T.1				validationi (eason (i lag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
,1,2-Trichloro-1,2,2-Trifluoroethane	0.45	U	U	0.45	25	UG/L	
1,1,2-Trichloroethane	0.38	U	U	0.38	10	UG/L	
1,1-Dichloroethane	0.28	U	U	0.28	10	UG/L	
1,1-Dichloroethene	0.43	U	U	0.43	25	UG/L	
1,1-Dichloropropene	0.46	U	U	0.46	10	UG/L	
1,2,3-Trichlorobenzene	0.51	U	U	0.51	25	UG/L	
1,2,3-Trichloropropane	0.64	U	U	0.64	5	UG/L	
1,2,4-Trichlorobenzene	0.5	U	U	0.5	25	UG/L	
1,2,4-Trimethylbenzene	0.36	U	U	0.36	10	UG/L	
1,2-Dibromo-3-Chloropropane	1.2	U	U	1.2	25	UG/L	
1,2-Dibromoethane	0.36	U	U	0.36	10	UG/L	
1,2-Dichlorobenzene	0.46	U	U	0.46	10	UG/L	
1,2-Dichloroethane	0.24	U	U	0.24	5	UG/L	
1,2-Dichloropropane	0.42	U	U	0.42	10	UG/L	
1,3,5-Trimethylbenzene	0.28	U	U	0.28	10	UG/L	
1,3-Dichlorobenzene	0.4	U	U	0.4	10	UG/L	
1,3-Dichloropropane	0.3	U	U	0.3	10	UG/L	
1,4-Dichlorobenzene	0.43	U	U	0.43	10	UG/L	
2,2-Dichloropropane	0.36	U	U	0.36	5	UG/L	
2-Butanone	2.2	U	U	2.2	50	UG/L	
2-Chloro-1,1,1-trifluoroethane	2.1	U	U	2.1	25	UG/L	
2-Chloroethyl Vinyl Ether	16	R	U	16	25	UG/L	2Cleve (R)
2-Chlorotoluene	0.24	U	U	0.24	25	UG/L	
2-Hexanone	2.1	U	U	2.1	50	UG/L	
4-Chlorotoluene	0.13	U	U	0.13	25	UG/L	
4-Methyl-2-Pentanone	4.4	U	U	4.4	25	UG/L	
Acetone	6	U	U	6	50	UG/L	
Benzene	0.14	U	U	0.14	10	UG/L	
Bromobenzene	0.3	U	U	0.3	25	UG/L	
Bromochloromethane	0.48	U	U	0.48	25	UG/L	
Bromodichloromethane	0.21	U	U	0.21	10	UG/L	
Bromoform	0.5	U	U	0.5	25	UG/L	
Bromomethane	3.9	U	U	3.9	25	UG/L	
c-1,2-Dichloroethene	0.48	U	U	0.48	5	UG/L	
c-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
Carbon Tetrachloride	0.23	U	U	0.23	0.5	UG/L	
Caron Tenumonae	3.23			0.23	3.5	2 3/ E	

U U 0.17

0.17

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UG/L

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Field ID	SP29BGW011	D003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Chloroethane	2.3	U	U	2.3	25	UG/L	validation (cason (r lag
Chloroform	0.46	U	U	0.46	10	UG/L	
Chloromethane	1.8	U	U	1.8	25	UG/L	
Chlorotrifluoroethylene	1.8	U	U	1.8	25	UG/L	
Dibromochloromethane	0.25	U	U	0.25	10	UG/L	
Dibromomethane	0.23	U	U	0.23	5	UG/L	
Dichlorodifluoromethane	0.46	U	U	0.46	25	UG/L	
Ethylbenzene	0.14	U	U	0.14	10	UG/L	
Hexachloro-1,3-Butadiene	0.14	U	U	0.32	25	UG/L	
Isopropanol	69	J	=J	37	100	UG/L	InvalidLabFlag (J)
Isopropylbenzene	0.58	U	_J U	0.58	100	UG/L	ilivalidLabriag (3)
Methylene Chloride	0.58	U	U	0.58	25	UG/L	
•	0.04		U	0.64	25 25	UG/L UG/L	
Methyl-t-Butyl Ether (MTBE)		U					
n-Butylbenzene	0.23	U	U	0.23	25	UG/L	
n-Propylbenzene	0.17	U	U	0.17	10	UG/L	
o-Xylene	0.23	U	U	0.23	10	UG/L	
p/m-Xylene	0.3	U	U	0.3	10	UG/L	
Pentachloroethane	1.5	U	U	1.5	10	UG/L	
p-Isopropyltoluene	0.16	U	U	0.16	10	UG/L	
sec-Butylbenzene	0.25	U	U	0.25	25	UG/L	
Styrene	0.17	U	U	0.17	10	UG/L	
t-1,2-Dichloroethene	0.37	U	U	0.37	10	UG/L	
t-1,3-Dichloropropene	0.25	U	U	0.25	10	UG/L	
tert-Butylbenzene	0.28	U	U	0.28	25	UG/L	
Tetrachloroethene	0.39	U	U	0.39	5	UG/L	
Toluene	0.24	U	U	0.24	10	UG/L	
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	
Field ID	SP29BGW01	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1,1,2-Tetrachloroethane	0.4	U	U	0.4	5	UG/L	
1,1,1-Trichloroethane	0.3	U	U	0.3	10	UG/L	
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane	0.3 0.41	U U		0.3 0.41	10 10	UG/L UG/L	
1,1,2,2-Tetrachloroethane	0.41	U	U	0.41	10	UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane	0.41 0.45	U U	U U	0.41 0.45	10 25	UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane	0.41 0.45 0.38	U U U	U U U	0.41 0.45 0.38	10 25 10	UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane	0.41 0.45 0.38 0.28	U U U U	U U U U	0.41 0.45 0.38 0.28	10 25 10 10	UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene	0.41 0.45 0.38 0.28 0.43	U U U U	U U U U	0.41 0.45 0.38 0.28 0.43	10 25 10 10 25	UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene	0.41 0.45 0.38 0.28 0.43	U U U U U	U U U U U	0.41 0.45 0.38 0.28 0.43 0.46	10 25 10 10 25 10	UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene	0.41 0.45 0.38 0.28 0.43 0.46 0.51	U U U U U U	U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51	10 25 10 10 25 10 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	0.41 0.45 0.38 0.28 0.43 0.46 0.51	U U U U U U	U U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51	10 25 10 10 25 10 25 5	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5	U U U U U U U	U U U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5	10 25 10 10 25 10 25 5 5 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36	U U U U U U U U	U U U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36	10 25 10 10 25 10 25 5 25 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene 1,2,4-Trimethylbenzene 1,2-Dibromo-3-Chloropropane	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36 1.2	U U U U U U U U	U U U U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36 1.2	10 25 10 10 25 10 25 5 25 10 25 25	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	
1,1,2,2-Tetrachloroethane 1,2-Trichloro-1,2,2-Trifluoroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,1-Dichloropropene 1,2,3-Trichlorobenzene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene 1,2,4-Trimethylbenzene	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36	U U U U U U U U	U U U U U U U U	0.41 0.45 0.38 0.28 0.43 0.46 0.51 0.64 0.5 0.36	10 25 10 10 25 10 25 5 25 10	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	

Validated Form I

Field ID SP29BGW01S003 Final Lab Flag Flag Analyte Result MDL RL Units ValidationReason (Flag) U 10 UG/L 1,2-Dichloropropane 0.42 U 0.42 1,3,5-Trimethylbenzene 0.28 U U 0.28 10 UG/L U 1,3-Dichlorobenzene 0.4 U 0.4 10 UG/L 1,3-Dichloropropane 0.3 U U 0.3 10 UG/L 1,4-Dichlorobenzene 0.43 U U 0.43 10 UG/L 2,2-Dichloropropane 0.36 U U 0.36 5 UG/L U U 2-Butanone 2.2 2.2 50 UG/L 2-Chloro-1,1,1-trifluoroethane 2.1 U U 25 UG/L 2.1 2-Chloroethyl Vinyl Ether 16 R U 16 25 UG/L 2Cleve (R) U U 0.24 2-Chlorotoluene 0.24 25 UG/L 2-Hexanone 2.1 U U 50 UG/L 2.1 0.13 U U 25 4-Chlorotoluene 0.13 UG/L 4-Methyl-2-Pentanone 4.4 U U 4.4 25 UG/L U U 50 Acetone 6 6 UG/L Benzene 0.14 U U 0.14 10 UG/L 0.3 U U 0.3 25 UG/L Bromobenzene Bromochloromethane 0.48 U U 0.48 25 UG/L U Bromodichloromethane 0.21 U 0.21 10 UG/L Bromoform 0.5 U U 0.5 25 UG/L Bromomethane 3.9 U U 3.9 25 UG/L c-1,2-Dichloroethene 0.48 U U 0.48 5 UG/L c-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L 0.23 U U 0.23 0.5 UG/L Carbon Tetrachloride Chlorobenzene 0.17 U U 0.17 10 UG/L U Chloroethane 2.3 U 2.3 25 UG/L Chloroform 0.46 U U 0.46 10 UG/L Chloromethane U U 25 1.8 1.8 UG/L Chlorotrifluoroethylene U U 25 1.8 1.8 UG/L Dibromochloromethane 0.25 U U 0.25 10 UG/L Dibromomethane 0.46 U U 0.46 5 UG/L Dichlorodifluoromethane 0.46 U U 0.46 25 UG/L Ethylbenzene 0.14 U U 0.14 10 UG/L Hexachloro-1,3-Butadiene 0.32 U U 0.32 25 UG/L U U 100 Isopropanol 37 37 UG/L Isopropylbenzene 0.58 U U 0.58 10 UG/L Methylene Chloride U U 0.64 UG/L 0.64 25 Methyl-t-Butyl Ether (MTBE) 0.31 U U 0.31 25 UG/L n-Butylbenzene U 0.23 U 0.23 25 UG/L n-Propylbenzene U U 0.17 0.17 10 UG/L o-Xylene 0.23 U U 0.23 10 UG/L p/m-Xylene 0.3 U U 0.3 10 UG/L 10 Pentachloroethane 1.5 U U 1.5 UG/L p-Isopropyltoluene 0.16 U U 0.16 10 UG/L sec-Butylbenzene 0.25 U U 0.25 25 UG/L Styrene 0.17 U U 0.17 10 UG/L t-1,2-Dichloroethene 0.37 U U 0.37 10 UG/L t-1,3-Dichloropropene 0.25 U U 0.25 10 UG/L tert-Butylbenzene 0.28 U U 0.28 25 UG/L Tetrachloroethene 0.39 U U 0.39 5 UG/L Toluene 0.24 U U 0.24 10 UG/L

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Field ID	SP29BGW01	8003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Trichloroethene	0.37	U	U	0.37	5	UG/L	
Trichlorofluoromethane	1.7	U	U	1.7	25	UG/L	
Vinyl Chloride	0.3	U	U	0.3	0.5	UG/L	

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Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
MS <lcl< td=""><td>Matrix spike recovery less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike recovery less than the lower control limit	Matrix
SD <lcl< td=""><td>Matrix spike duplicate recovery criteria less than the lower control limit</td><td>Matrix</td></lcl<>	Matrix spike duplicate recovery criteria less than the lower control limit	Matrix
2Cleve	Acid Preserved Sample	Miscellaneous
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

Data Quality Evaluation

SDG 16080986 Method SW8260B-SIM

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016_____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC				
NativeID	Type Dilution ABLotValue		EBLotValue	TBLotValue	
WATER					
CAQW2471Q001	TB	1		12081601 / CAQW2471Q001 / 160809	
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809	

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blank detects were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest No samples were excluded for dilutions or re-extractions.

COC Review

No discrepancies

Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,2,3-Trichloropropane	0.0025	U	U	0.0025	0.005	UG/L	
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	RD68BGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,2,3-Trichloropropane	0.0025	U	U	0.0025	0.005	UG/L	
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	SP29BGW01I	0003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,2,3-Trichloropropane	0.0025	U	U	0.0025	0.005	UG/L	
1,4-Dioxane	0.35	U	U	0.35	1	UG/L	
Field ID	SP29BGW015	S003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,2,3-Trichloropropane	0.0025	U	U	0.0025	0.005	UG/L	
1,4-Dioxane	0.35	U					

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Validated Form I

Data Quality Evaluation

SDG 16080986 Method SW8270C-SIM

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	ilution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

The following items were noted: LB<RL

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks These analytes had Method Blank detects: Bis(2-Ethylhexyl) Phthalate, Butyl Benzyl Phthalate,

Di-n-Butyl Phthalate.

Blank	Type Blank ID	Analyte	Result	ReportLimit LabFlag	<u>Units</u>	SDG
LB	0991630233	Bis(2-Ethylhexyl) Phthal	0.062	10 =J	UG/L	16080986
LB	0991630233	Butyl Benzyl Phthalate	0.06	10 =J	UG/L	16080986
LB	0991630233	Di-n-Butyl Phthalate	0.19	10 =J	UG/L	16080986

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** All acceptance criteria were met.

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6. Tuning and Mass Calibration

Tuning and Mass Calibration were not examined by AutoDV.

7. Internal Standard

Internal Standard Area/Retention Time was not examined by AutoDV.

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Method Blanks: These analytes had Method Blank detects: Bis(2-Ethylhexyl) Phthalate, Butyl Benzyl

Phthalate, Di-n-Butyl Phthalate.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Validated Form I

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Bis(2-Ethylhexyl) Phthalate	0.1	U	=BJ	0.048	9.8	UG/L	LB <rl (u)<="" td=""></rl>
Butyl Benzyl Phthalate	0.063	U	=BJ	0.052	9.8	UG/L	LB <rl (u)<="" td=""></rl>
Diethyl Phthalate	0.052	U	U	0.052	9.8	UG/L	
Dimethyl Phthalate	0.045	U	U	0.045	9.8	UG/L	
Di-n-Butyl Phthalate	0.24	U	=BJ	0.079	9.8	UG/L	LB <rl (u)<="" td=""></rl>
Di-n-Octyl Phthalate	0.047	U	U	0.047	9.8	UG/L	
Field ID	RD68BGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Bis(2-Ethylhexyl) Phthalate	0.055	U	=BJ	0.048	9.8	UG/L	LB <rl (u)<="" td=""></rl>
Butyl Benzyl Phthalate	0.052	U	U	0.052	9.8	UG/L	LB <rl (none)<="" td=""></rl>
Diethyl Phthalate	0.052	U	U	0.052	9.8	UG/L	
Dimethyl Phthalate	0.39	J	=J	0.045	9.8	UG/L	InvalidLabFlag (J)
Di-n-Butyl Phthalate	0.085	U	=BJ	0.079	9.8	UG/L	LB <rl (u)<="" td=""></rl>

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Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LB <rl< td=""><td>Laboratory blank contamination less than the reporting limit</td><td>Blank</td></rl<>	Laboratory blank contamination less than the reporting limit	Blank
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

Data Quality Evaluation

SDG 16080986 **Method** SW8330A

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016 ____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks These analytes had Method Blank detects: 2-Amino-4,6-DNT. No flagging applied

Blank Typ	<u>be</u> <u>Blank ID</u>	<u>Analyte</u>	Result	ReportLimit LabFlag	<u>Units</u>	<u>SDG</u>
LB	0991631429	2-Amino-4,6-DNT	1.2	1.1	UG/L	16080986

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG. MS RPD: None for this SDG.

4. Laboratory Control SampleThese LCS analytes were out of control: 2,4,6-Trinitrotoluene (BS). Since recovery was high and sample results were ND, no flagging applied. All RPD acceptance criteria were met.

<u>Matrix</u>	QAQC Ty	oe <u>Field ID</u>	<u>Analyte</u>	Recovery	LowerLimit	UpperLimit
WATER	BS	0991631429BS	2,4,6-Trinitrotoluene	132	80	130

5. SurrogatesThese surrogates were out of control: 1,2-Dinitrobenzene (RD68BGW01S006). Since recovery was high and sample results were ND, no flagging applied.

16080986 SW8330A

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Field IDLabsampleIDUpperLimitLowerLimitResultSurrogateRD68BGW01S006160809863120751741,2-Dinitrobenzene

6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time All acceptance criteria were met.

10. Confirmation None for this SDG.

11. Summary

General Comments Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions. Method Blanks: These analytes had Method Blank detects: 2-Amino-4,6-DNT.

Surrogates: These surrogates were out of control: 1,2-Dinitrobenzene (RD68BGW01S006). Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

Interest

No samples were excluded for dilutions or re-extractions.

COC Review No discrepancies

Final Data Flags*

Field ID	RD68AGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,3,5-Trinitrobenzene	0.044	U	U	0.044	0.98	UG/L	
1,3-Dinitrobenzene	0.049	U	U	0.049	0.98	UG/L	
2,4,6-Trinitrotoluene	0.025	U	U	0.025	0.98	UG/L	LCS>UCL (none)
2,4-Dinitrotoluene	0.038	U	U	0.038	0.98	UG/L	
2,6-Dinitrotoluene	0.051	U	U	0.051	0.98	UG/L	
2-Amino-4,6-DNT	0.059	U	U	0.059	0.98	UG/L	LB>RL (none)
2-Nitrotoluene	0.039	U	U	0.039	0.98	UG/L	
3-Nitrotoluene	0.045	U	U	0.045	0.98	UG/L	
4-Amino-2,6-DNT	0.052	U	U	0.052	0.98	UG/L	
4-Nitrotoluene	0.052	U	U	0.052	0.98	UG/L	
HMX	0.045	U	U	0.045	0.98	UG/L	
Nitrobenzene	0.054	U	U	0.054	0.98	UG/L	
RDX	0.058	U	U	0.058	0.98	UG/L	
Tetryl	0.065	U	U	0.065	0.98	UG/L	
Field ID	RD68BGW01	\$006					
	KD00DG W01	Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Fla
1,3,5-Trinitrobenzene	0.05	U	U	0.05	1.1	UG/L	Sur>UCL (none)
1.3-Dinitrobenzene	0.056	U	U	0.056	1.1	UG/L	Sur>UCL (none)
2,4,6-Trinitrotoluene	0.029	U	U	0.029	1.1	UG/L	LCS>UCL (none)
, , ,	0.029	U	U	0.029	1.1	UG/L	Sur>UCL (none)
2,4-Dinitrotoluene	0.043	U	U	0.043	1.1	UG/L	Sur>UCL (none)
2,6-Dinitrotoluene	0.058	U	U	0.058	1.1	UG/L	Sur>UCL (none)
2-Amino-4,6-DNT	0.067	U	U	0.067	1.1	UG/L	LB>RL (none)
7	0.067	U	U	0.067	1.1	UG/L	Sur>UCL (none)
2-Nitrotoluene	0.044	U	U	0.044	1.1	UG/L	Sur>UCL (none)
3-Nitrotoluene	0.052	U	U	0.052	1.1	UG/L	Sur>UCL (none)
4-Amino-2,6-DNT	0.06	U	U	0.06	1.1	UG/L	Sur>UCL (none)
4-Nitrotoluene	0.059	U	U	0.059	1.1	UG/L	Sur>UCL (none)
HMX	0.051	U	U	0.051	1.1	UG/L	Sur>UCL (none)
Nitrobenzene	0.062	U	U	0.062	1.1	UG/L	Sur>UCL (none)
RDX	0.066	U	U	0.066	1.1	UG/L	Sur>UCL (none)
Tetryl	0.074	U	U	0.074	1.1	UG/L	Sur>UCL (none)
· · · <i>y</i> -	~-~.	-	-				

Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
LB>RL	Laboratory blank contamination greater than the reporting limit	Blank
LCS>UCL	LCS recovery greater than the upper control limit	LaboratoryControlSample
Sur>UCL	Surrogate recovery greater than the upper control limit	SurrogateRecovery

Data Quality Evaluation

SDG 16081070 **Method SW8315A**

Reviewer: mfesler Date: 9/2/2016 Matrix: WATER

Reviewed: ___ 9/2/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

	QAQC			
NativeID	Type Dil	lution ABLotValue	EBLotValue	TBLotValue
				·
WATER				
RD68AGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
RD68AGW01S006SD	SD	1		
RD68AGW01S006MS	MS	1		
RD68BGW01S006	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates No FD Associated.

Laboratory Duplicates None in this SDG

Matrix Spike All MS acceptance criteria were met. All SD acceptance criteria were met. All RPD

acceptance criteria were met.

4. Laboratory Control Sample All acceptance criteria were met.

5. Surrogates All acceptance criteria were met.

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6. Tuning and Mass Calibration

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration Initial Calibration was not examined by AutoDV.

Continuing Calibration Continuing Calibration was not examined by AutoDV.

9. Holding Time

All acceptance criteria were met.

10. Confirmation

None for this SDG.

11. Summary

General Comments

Field Duplicates: No FD Associated.

Form I Review: No samples were excluded for dilutions or re-extractions.

Tuning and Mass Calibration: Tuning and Mass Calibration were not examined by AutoDV.

Internal Standard Area/Retention Time: Internal Standard Area/Retention Time was not examined by

AutoDV.

Initial Calibration: Initial Calibration was not examined by AutoDV.

Continuing Calibration: Continuing Calibration was not examined by AutoDV.

VDMS4.32

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

Field ID	RD68AGW01	S006					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
1,1-DIMETHYLHYDRAZINE	0.25	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	20	U	U	20	50	UG/L	
Field ID	RD68BGW01	S006					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
1,1-DIMETHYLHYDRAZINE	0.25	U	U	0.25	0.8	UG/L	
FORMALDEHYDE	20	U	U	20	50	UG/L	

Validated Form I

Data Quality Evaluation

SDG 16090740 Method E900

Reviewer: mfesler Date: 10/3/2016 **Matrix: WATER**

10/3/2016 Reviewed:

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative **Items of Interest**

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG.

- 4. Laboratory Control Sample All acceptance criteria were met.
- 5. Surrogates No surrogates in this SDG.
- 6. Tuning and Mass N/A **Calibration**

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration No DV

Continuing Calibration No DV

9. Holding Time All acceptance criteria were met.

10. Confirmation N/A

11. Summary

General Comments All acceptance criteria were met.

Data Package Completeness Package was complete for level V validation

Forms Review/ Items of

Interest

These NativeIDs had dilutions or re-extractions that were flagged Exclude: SP29BGW01D003, SP29BGW01S003. Samples were re-processed and re-analyzed to confirm original sample analysis results. The reprocessed sample results will be used per Jon

Freed.

COC Review No discrepancies

Final Data Flags*

Field ID	SP29BGW01I	0003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Gross Alpha	5.23	U	UG	7.53	7.53	pCi/L	InvalidLabFlag (U)
	3.07	Exclude	UG	4.54	4.54	pCi/L	exclude (Exclude)
Gross Alpha, decanted	4.88	U	UG	6.87	6.87	pCi/L	InvalidLabFlag (U)
	5.84	Exclude	G	4.93	4.93	pCi/L	exclude (Exclude)
Gross Beta	4.7	Exclude		2.11	2.11	pCi/L	exclude (Exclude)
	7.19			3.85	3.85	pCi/L	
Gross Beta, decanted	5.62			3.8	3.8	pCi/L	
	4.33	Exclude		1.91	1.91	pCi/L	exclude (Exclude)
Field ID	SP29BGW01S	5003					
Field ID Analyte	SP29BGW018	5003 Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flaç
		Final		MDL 5.58	RL 5.58	Units pCi/L	ValidationReason (Flaç InvalidLabFlag (=)
Analyte	Result	Final	Flag				,
Analyte	Result	Final Flag	Flag G	5.58	5.58	pCi/L	InvalidLabFlag (=)
Analyte Gross Alpha	S.9 3.84	Final Flag Exclude	Flag G G	5.58	5.58 3.83	pCi/L pCi/L	InvalidLabFlag (=) exclude (Exclude)
Gross Alpha	5.9 3.84 5.15	Final Flag Exclude U	G G U G	5.58 3.83 9.18	5.58 3.83 9.18	pCi/L pCi/L pCi/L	InvalidLabFlag (=) exclude (Exclude) InvalidLabFlag (U)
Analyte Gross Alpha Gross Alpha, decanted	Sesult 5.9 3.84 5.15 5.57	Final Flag Exclude U Exclude	G G U G	5.58 3.83 9.18 6.05	5.58 3.83 9.18 6.05	pCi/L pCi/L pCi/L pCi/L	InvalidLabFlag (=) exclude (Exclude) InvalidLabFlag (U) exclude (Exclude)
Analyte Gross Alpha Gross Alpha, decanted	5.9 3.84 5.15 5.57 3.37	Final Flag Exclude U Exclude	G G U G	5.58 3.83 9.18 6.05 1.92	5.58 3.83 9.18 6.05 1.92	pCi/L pCi/L pCi/L pCi/L pCi/L	InvalidLabFlag (=) exclude (Exclude) InvalidLabFlag (U) exclude (Exclude)

Validated Form I

Validation Flag Abbreviations

Abbreviation	Validation Reason	Category
exclude	Data not used; another value is appropriate or data was not requested	Exclude
InvalidLabFlag	Removed invalid laboratory flag	Miscellaneous

Data Quality Evaluation

SDG 16090740 Method E901.1

Reviewer: mfesler Date: 9/13/2016 Matrix: WATER

Reviewed: ___ 10/3/2016____

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
SP29BGW01D003	LR	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates All acceptance criteria were met.

Matrix Spike No MS's for this SDG. No SD's for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met. No spike dupes in this SDG.
- **5. Surrogates** No surrogates in this SDG.

16090740 E901.1

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6. Tuning and Mass **Calibration**

N/A

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration

No DV

Continuing Calibration

No DV

9. Holding Time

All acceptance criteria were met.

10. Confirmation

N/A

11. Summary

General Comments

All acceptance criteria were met.

Data Package Completeness

Package was complete for level V validation

Forms Review/ Items of

No samples were excluded for dilutions or re-extractions.

Interest

COC Review

Nitric acid preservative added to the sample bottle marked "filtered" upon receipt at the

laboratory

Final Data Flags*

*When the data evaluation process results in multiple flags, the most severe flag becomes the final data flag. All flags are from the site-specific QAPP, except the "exclude" flag that is used to designate results that are not for risk assessment (for example, a result from a dilution where the original undiluted result is appropriate).

Field ID	SP29BGW01I	0003					
		Final	Lab				
Analyte	Result	Flag	Flag	MDL	RL	Units	ValidationReason (Flag
Actinium-228	8.47	U	U	57	57	pCi/L	
Actinium-228, Dissolved	11.8	U	U	43.9	43.9	pCi/L	
Americium-241	-2.12	U	U	33.8	33.8	pCi/L	
Americium-241, Dissolved	7.77	U	U	48.5	48.5	pCi/L	
Antimony-125	-4.3	U	U	45	45	pCi/L	
Antimony-125, Dissolved	12.9	U	U	39.7	39.7	pCi/L	
Barium-133	-7	U	U	59.7	59.7	pCi/L	
Barium-133, Dissolved	-0.17	U	U	53.5	53.5	pCi/L	
Bismuth-212	22.5	U	U	212	212	pCi/L	
Bismuth-212, Dissolved	0	U	U	193	193	pCi/L	
Bismuth-214	466			26.9	26.9	pCi/L	
Bismuth-214, Dissolved	393			24.5	24.5	pCi/L	
Cesium-134	8.71	U	U	50.6	50.6	pCi/L	
Cesium-134, Dissolved	2.23	U	U	48.2	48.2	pCi/L	
Cesium-137	-5.24	U	U	19.4	19.4	pCi/L	
Cesium-137, Dissolved	-2.31	U	U	18.1	18.1	pCi/L	
Cobalt-57	-4.25	U	U	15.5	15.5	pCi/L	
Cobalt-57, Dissolved	-4.63	U	U	15.4	15.4	pCi/L	
Cobalt-60	0.244	U	U	13.1	13.1	pCi/L	
Cobalt-60, Dissolved	2.56	U	U	14.9	14.9	pCi/L	
Europium-152	13.3	U	U	69.1	69.1	pCi/L	
Europium-152, Dissolved	2.29	U	U	82.8	82.8	pCi/L	
Europium-154	5.3	U	U	146	146	pCi/L	
Europium-154, Dissolved	26.1	U	U	132	132	pCi/L	
Europium-155	-0.35	U	U	59.5	59.5	pCi/L	
Europium-155, Dissolved	11.3	U	U	58.8	58.8	pCi/L	
Lead-210	-218	U	U	349	349	pCi/L	
Lead-210, Dissolved	-262	U	U	384	384	pCi/L	
Lead-212	-0.762	U	U	46.4	46.4	pCi/L	
Lead-212, Dissolved	7.79	U	U	22.5	22.5	pCi/L	
Lead-214	509			24.9	24.9	pCi/L	
Lead-214, Dissolved	413			28.4	28.4	pCi/L	
Manganese-54	-2.97	U	U	13.5	13.5	pCi/L	
Manganese-54, Dissolved	-10.4	U	U	19.7	19.7	pCi/L	
Potassium-40	41.7	U	U	201	201	pCi/L	
Potassium-40, Dissolved	-4.98	U	U	190	190	pCi/L	
Sodium-22	6.37	U	U	12.6	12.6	pCi/L	
Sodium-22, Dissolved	2.82	U	U	11.6	11.6	pCi/L	
Thallium-208	3.23	U	U	14.3	14.3	pCi/L	
Thallium-208, Dissolved	-7.61	U	U	16.6	16.6	pCi/L	

mfesler

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Field ID	SP29BGW01I	0003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
Thorium-234	-165	U	U	372	372	pCi/L	
Thorium-234, Dissolved	-224	U	U	448	448	pCi/L	
Field ID	SP29BGW01	S003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Fla
Actinium-228	23	U	U	57.7	57.7	pCi/L	
Actinium-228, Dissolved	21.3	U	U	45.9	45.9	pCi/L	
Americium-241	-10.6	U	U	51.9	51.9	pCi/L	
Americium-241, Dissolved	-3.29	U	U	35	35	pCi/L	
Antimony-125	15.5	U	U	48.7	48.7	pCi/L	
Antimony-125, Dissolved	20.1	U	U	31.9	31.9	pCi/L	
Barium-133	-9.23	U	U	64.4	64.4	pCi/L	
Barium-133, Dissolved	-8.7	U	U	63.6	63.6	pCi/L	
Bismuth-212	75.6	U	U	229	229	pCi/L	
Bismuth-212, Dissolved	47.2	U	U	276	276	pCi/L	
Bismuth-214	523	-		30.3	30.3	pCi/L	
Bismuth-214, Dissolved	418			27.5	27.5	pCi/L	
Cesium-134	9.02	U	U	55.1	55.1	pCi/L	
Cesium-134, Dissolved	-7.18	U	U	56.1	56.1	pCi/L	
Cesium-137	-8.65	U	UG	27.1	27.1	pCi/L	InvalidLabFlag (U)
Cesium-137, Dissolved	1.38	U	UG	23.3	23.3	pCi/L	InvalidLabFlag (U)
Cobalt-57	-45	U	U	223	223	pCi/L pCi/L	invalidLabriag (O)
Cobalt-57, Dissolved	3.04	U	U	14.2	14.2	pCi/L pCi/L	
Cobalt-60	4.41	U	U	14.2	14.2	pCi/L pCi/L	
Cobalt-60, Dissolved	7.21	U	U	17.4	17.4	=	
	12.1					pCi/L	
Europium-152		U	U	100	100	pCi/L	
Europium-152, Dissolved	-4.79	U	U	88.1	88.1	pCi/L	
Europium-154	29.7	U	U	157	157	pCi/L	
Europium-154, Dissolved	55.3	U	U	182	182	pCi/L	
Europium-155	-21.9	U	U	125	125	pCi/L	
Europium-155, Dissolved	-14.4	U	U	63.7	63.7	pCi/L	
Lead-210	233	U	U	254	254	pCi/L	
Lead-210, Dissolved	122	U	U	250	250	pCi/L	
Lead-212	-3.99	U	U	54	54	pCi/L	
Lead-212, Dissolved	2.65	U	U	22.7	22.7	pCi/L	
Lead-214	558			30.3	30.3	pCi/L	
Lead-214, Dissolved	457			33.4	33.4	pCi/L	
Manganese-54	-0.0242	U	U	19.2	19.2	pCi/L	
Manganese-54, Dissolved	-6.54	U	U	19.2	19.2	pCi/L	
Potassium-40	8.78	U	U	214	214	pCi/L	
Potassium-40, Dissolved	-2.4	U	U	227	227	pCi/L	
Sodium-22	-12.3	U	U	21.9	21.9	pCi/L	
Sodium-22, Dissolved	-2.66	U	U	18.9	18.9	pCi/L	
Thallium-208	-0.0769	U	U	20	20	pCi/L	
Thallium-208, Dissolved	-0.317	U	U	18.1	18.1	pCi/L	
Thorium-234	-56.8	U	U	476	476	pCi/L	
Thorium-234, Dissolved	-42.1	U	U	366	366	pCi/L	

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Validated Form I

Validation Flag Abbreviations

AbbreviationValidation ReasonCategoryInvalidLabFlagRemoved invalid laboratory flagMiscellaneous

Data Quality Evaluation

SDG 16	090740	Method	E905.0			
Reviewer:	mfesler		Date:	9/13/2016	Matrix:	WATER
Reviewed:	10/3/2016	_				

Field Samples

Field blank association lot values: LotNumber / FieldID / SDG

NativeID	QAQC Type Dil	lution ABLotValue	EBLotValue	TBLotValue
WATER				
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

7. Internal Standard

N/A

8. Calibration Information

Initial Calibration No DV

Continuing Calibration No DV

9. Holding Time All acceptance criteria were met.

10. Confirmation N/A

11. Summary

General Comments All acceptance criteria were met.

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review Nitric acid preservative added to the sample bottle upon receipt at the laboratory

Final Data Flags*

Field ID	SP29BGW01I	0003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Strontium 89/90	-0.191	U	U	0.38	0.38	pCi/L	
Field ID	SP29BGW01S	S003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Strontium 89/90	0.287	U	U	0.438	0.438	pCi/L	

Validated Form I

Data Quality Evaluation

SDG 16090740	Method	E906.0			
Reviewer: mfesler		Date:	9/13/2016	Matrix:	WATER

Field Samples

Reviewed: ___

Field blank association lot values: LotNumber / FieldID / SDG

10/3/2016

NativeID	QAQC Type Di	lution ABLotValue	EBLotValue	TBLotValue
WATER				
SP29BGW01D003	FD	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809
SP29BGW01S003	N	1 Missing Association NA	Missing Association NA	12081601 / CAQW2471Q001 / 160809

1. Case Narrative Items of Interest

There were no items of concern

2. Blank Summary

Field Blanks No Field Blanks were found.

Method Blanks No Method Blank detects were found.

3. Spikes and Duplicates

Field Duplicates All acceptance criteria were met.

Laboratory Duplicates None in this SDG

Matrix Spike No MS's for this SDG. No SD's for this SDG.

- **4. Laboratory Control Sample** All acceptance criteria were met.
- **5. Surrogates** No surrogates in this SDG.

16090740 E906.0

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7. Internal Standard

N/A

8. Calibration Information

Initial Calibration No DV

Continuing Calibration No DV

9. Holding Time All acceptance criteria were met.

10. Confirmation N/A

11. Summary

General Comments All acceptance criteria were met.

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

Field ID	SP29BGW011	0003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Tritium	-35.6	U	U	150	150	pCi/L	
Field ID	SP29BGW01	S003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag)
Tritium	-40.5	U	U	132	132	pCi/L	

Validated Form I

Data Quality Evaluation

6. Tuning and Mass

Calibration

N/A

SDG	16090740		Method	Radioisotope	s		
Reviewe	er: mfesle	er		Date:	9/13/2016	Matrix:	WATER
Reviewed:	1	0/3/2016					
	Samples		otNumber / FieldID /	enc			
NativeII		QAQC Type Diluti			EBLotValue		TBLotValue
		Type Ditte	TIDEOT VALUE		EDECTALLE		1 D D ot value
	GW01D003 GW01S003		Missing Association N Missing Association N		issing Association NA issing Association NA		12081601 / CAQW2471Q001 / 160809 12081601 / CAQW2471Q001 / 160809
	Narrative s of Interes	t There	e were no items of c	oncern			
2. Blan	ık Summar	y					
Field I	Blanks	No Field B	lanks were found.				
Metho	d Blanks	No Method	d Blank detects were	e found.			
3. Spik	es and Dup	licates					
Fie	eld Duplica	tes All acc	ceptance criteria wer	re met.			
Labora	atory Dupli	cates No	one in this SDG				
Matrix	Spike	No MS's fo	or this SDG. No SD	s for this SDG.			
4. Labo	oratory Con	ntrol Samp	ole All acceptan	nce criteria were met.	No spike dupes in thi	s SDG.	
5. Surr	ogates	No s	surrogates in this SI	OG.			

16090740 Radioisotopes

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7. Internal Standard

N/A

8. Calibration Information

Initial Calibration No DV

Continuing Calibration No DV

9. Holding Time All acceptance criteria were met.

10. Confirmation N/A

11. Summary

General Comments All acceptance criteria were met.

Data Package Completeness Package was complete for level V validation

Forms Review/ Items ofNo samples were excluded for dilutions or re-extractions.

Interest

COC Review No discrepancies

Final Data Flags*

Field ID	SP29BGW01D	003					
Analyte	Result	Final Flag	Lab Flag	MDL	RL	Units	ValidationReason (Flag
Uranium-233/234	0.992			0.237	0.237	pCi/L	
Uranium-235/236	0.0285	U	U	0.237	0.237	pCi/L	
Uranium-238	0.352			0.19	0.19	pCi/L	
Field ID	SP29BGW01S	003					
		Final	Lab				
		Flag	Flag		ъ.	11.5	\/ !' (' D
Analyte	Result	i iag	· lug	MDL	RL	Units	ValidationReason (Flag
Analyte Uranium-233/234	Result 1.22	- i iag	- i.ag	0.221	0.221	pCi/L	ValidationReason (Flag
		U	U				ValidationReason (Flag

Validated Form I

